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SIMATIC

Catalog News ST 70 N

Edition 2014

Answers for industry.

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SIMATIC
Products for Totally Integrated Automation

Catalog News ST 70 N · 2014

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The products contained in this catalog can also be found in the Interactive Catalog CA 01.
Article No.:
E86060-D4001-A510-D3-7600

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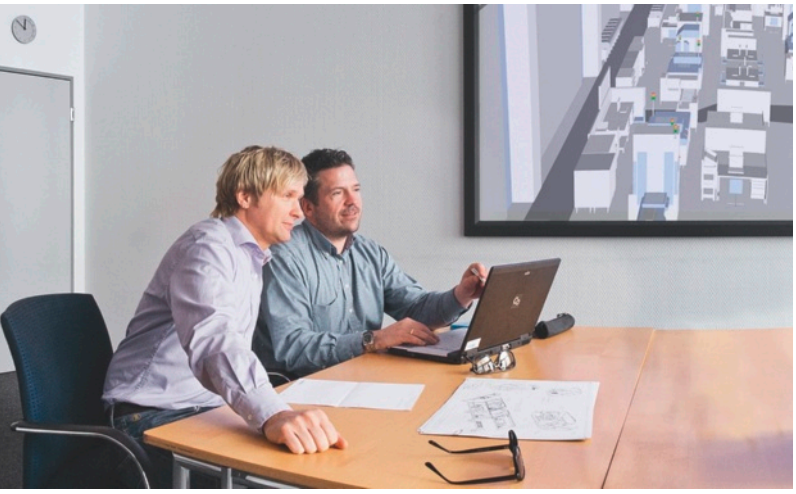


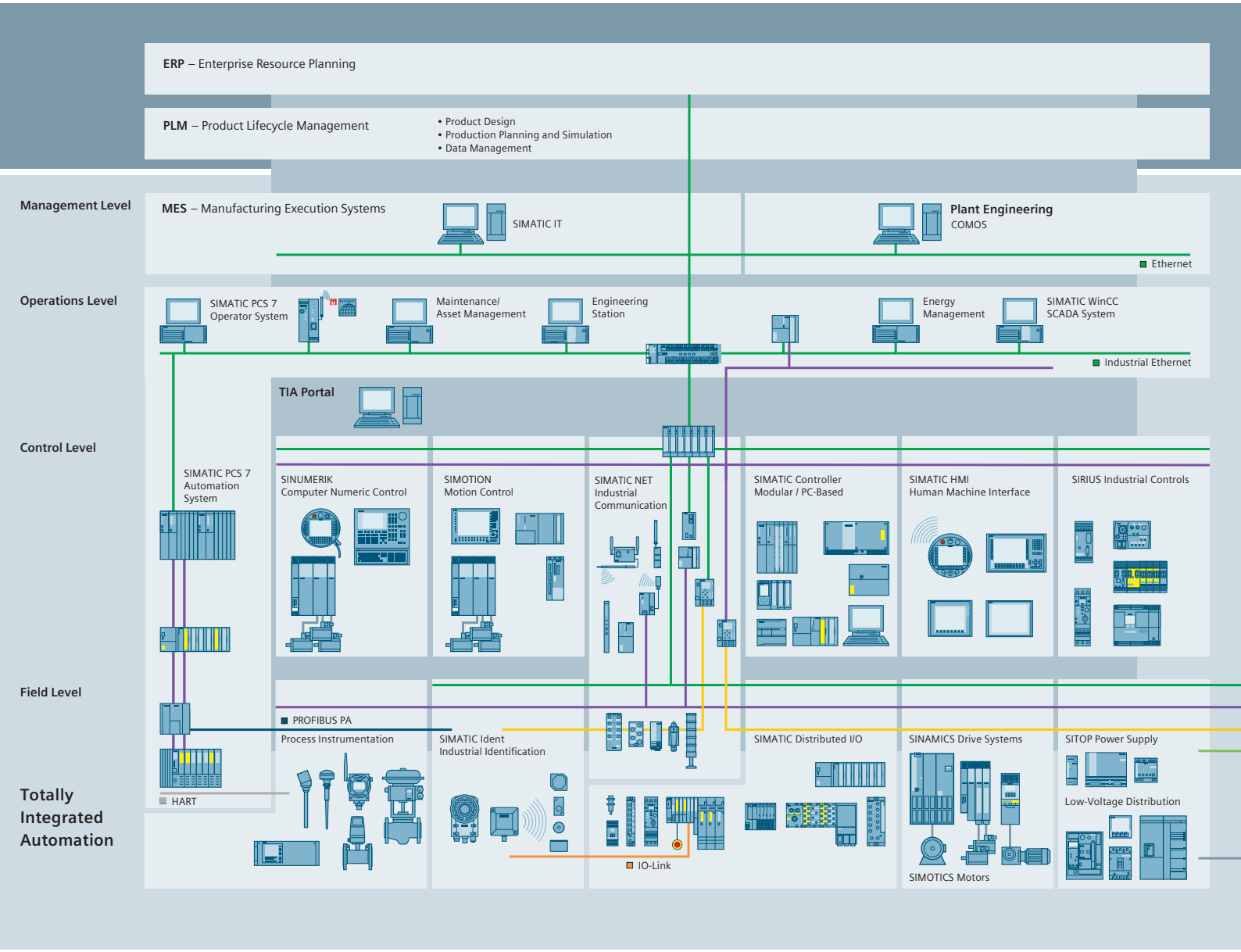
Answers for industry.

Integrated technologies, vertical market expertise and services for greater productivity, energy efficiency, and flexibility.

The Siemens Industry Sector is the world's leading supplier of innovative and environmentally friendly products and solutions for industrial companies. End-to-end automation technology and industrial software, solid market expertise, and technology-based services are the levers we use to increase our customers' productivity, efficiency and flexibility. With a global workforce of more than 100 000 employees, the Industry Sector comprises the Industry Automation, Drive Technologies, and Customer Services divisions, as well as the Metals Technologies Business Unit.

We consistently rely on integrated technologies and, thanks to our bundled portfolio, we can respond more quickly and flexibly to our customers' wishes. With our globally unmatched range of automation technology, industrial control and drive technology as well as industrial software, we equip companies with exactly what they need over their entire value chain – from product design and development to production, sales and service. Our industrial customers benefit from our comprehensive portfolio, which is tailored to their market and their needs.

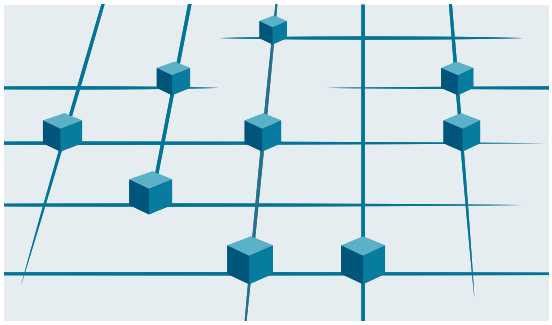
Market launch times can be reduced by up to 50% due to the combination of powerful automation technology and intelligent industrial software from Siemens Industry. At the same time, the costs for energy or waste water for a manufacturing company can be reduced significantly. In this way, we increase our customers' competitive strength and make an important contribution to environmental protection with our energy-efficient products and solutions.



Efficient automation starts with efficient engineering.

Totally Integrated Automation: Efficiency driving productivity.

Efficient engineering is the first step toward better production that is faster, more flexible, and more intelligent. With all components interacting efficiently, Totally Integrated Automation (TIA) delivers enormous time savings right from the engineering phase. The result is lower costs, faster time-to-market, and greater flexibility.



Totally Integrated Automation
Efficient interoperability of all automation components

- PROFINET
- Industrial Ethernet
- PROFIBUS
- AS-Interface
- KNX GAMMA instabus

Totally Integrated Power

A unique complete approach for all industries

As one of the world's leading automation suppliers, Siemens provides an integrated, comprehensive portfolio for all requirements in process and manufacturing industries. All components are mutually compatible and system-tested. This ensures that they reliably perform their tasks in industrial use and interact efficiently, and that each automation solution can be implemented with little time and effort based on standard products. The integration of many separate individual engineering tasks into a single engineering environment, for example, provides enormous time and cost savings.

With its comprehensive technology and industry-specific expertise, Siemens is continuously driving progress in manufacturing industries – and Totally Integrated Automation plays a key role.

Totally Integrated Automation creates real value added in all automation tasks, especially for:

- **Integrated engineering**
  Consistent, comprehensive engineering throughout the entire product development and production process
- **Industrial data management**
  Access to all important data occurring in productive operation – along the entire value chain and across all levels
- **Industrial communication**
  Integrated communication based on international cross-vendor standards that are mutually compatible
- **Industrial security**
  Systematic minimization of the risk of an internal or external attack on plants and networks
- **Safety Integrated**
  Reliable protection of personnel, machinery, and the environment thanks to seamless integration of safety technologies into the standard automation

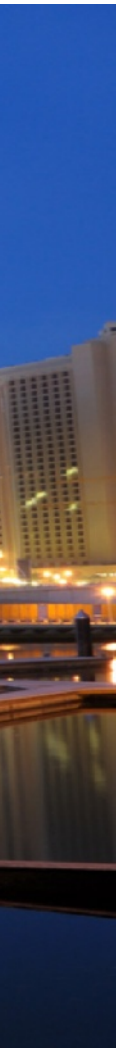
Making things right with Totally Integrated Automation

Totally Integrated Automation, industrial automation from Siemens, stands for the efficient interoperability of all automation components. The open system architecture covers the entire production process and is based on end-to-end shared characteristics: consistent data management, global standards, and uniform hardware and software interfaces.

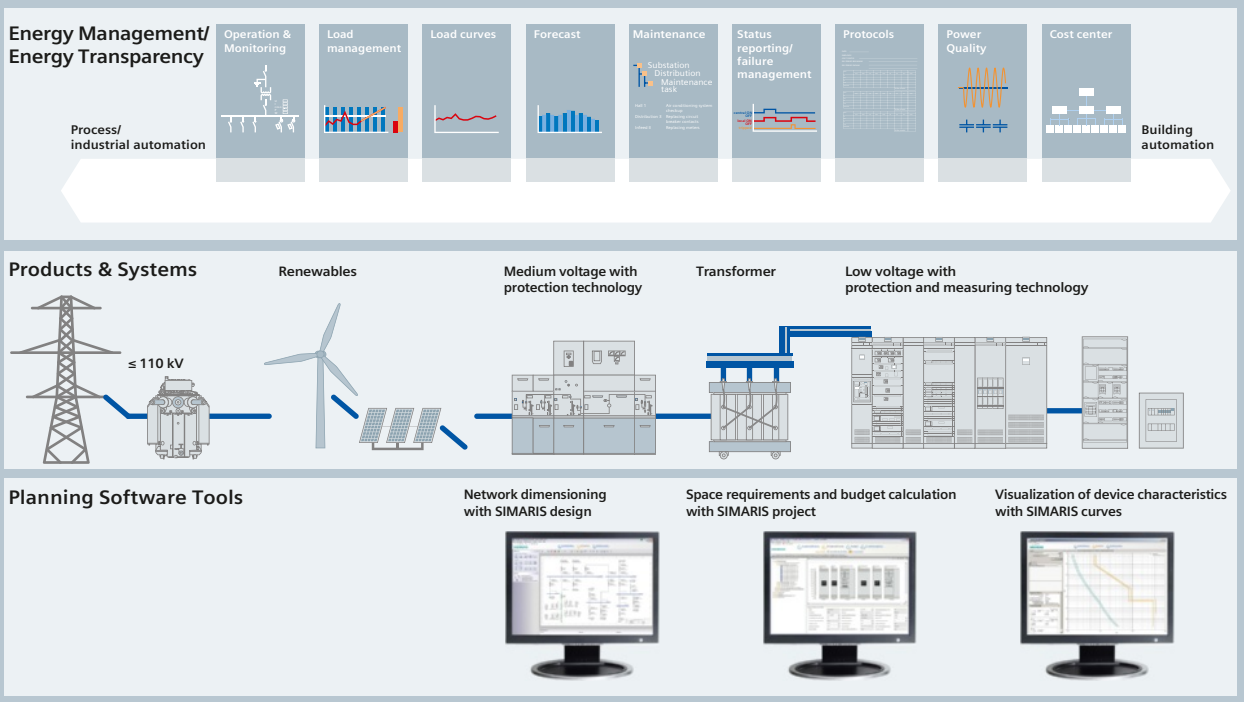
Totally Integrated Automation lays the foundation for comprehensive optimization of the production process:

- Time and cost savings due to efficient engineering
- Minimized downtime due to integrated diagnostic functions
- Simplified implementation of automation solutions due to global standards
- Better performance due to interoperability of system-tested components

Totally Integrated Power: Future-proof power supply from one source.



Software tools, products, systems and support for integrated electrical power distribution



The power supply system acts like a "vital artery", forming the basis for the reliable and efficient functioning of all electrically operated building installations. Electrical power distribution therefore requires integrated solutions. Our answer: Totally Integrated Power (TIP).

This includes software tools and support for planning and configuration and a complete, optimally aligned product and system portfolio for integrated power distribution from medium-voltage switchgear right to socket outlets.

The power distribution products and systems can be interfaced to building or industrial automation systems (Total Building Solutions or Totally Integrated Automation) via communication-capable circuit breakers and components, allowing the full potential for optimization that an integrated solution offers to be exploited throughout the project cycle – from planning right through to installation and operation.

Get more information:

www.siemens.com/tip
www.siemens.com/simaris
www.siemens.com/specifications

LOGO! logic module

2

Brochures

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

www.siemens.com/simatic/printmaterial

SIPLUS LOGO! PROM, LOGO! mounting kit, SIPLUS upmiter

Overview SIPLUS LOGO! PROM

LOGO! PROM is the programming device for easy reproduction of up to 8 LOGO! program modules. Copying is performed from a master module or via the PC program LOGO! Soft Comfort.

LOGO! PROM supports yellow and red program modules. Only yellow modules can be used as master modules, because red modules cannot be copied due to the know-how protection implemented.

A multi-colored LED on each module slot provides detailed information about the status of the respective program module and the copying procedure.

Ordering data	Article No.
LOGO! PROM	**6AG1057-1AA01-0BA6**
Programming device used to simultaneously reproduce program module contents on up to 8 program modules	

Overview LOGO! mounting kit

LOGO! and SIPLUS LOGO! are designed for quick and easy mounting on standard rails. With the mounting kit, these devices can also be easily and safely installed in front panels. If the supplied washer and seals are used, the devices are reliably protected against harsh environmental conditions up to the IP65 degree of protection.

Ordering data	Article No.
Front panel mounting kit	
Width 4 width units	**6AG1057-1AA00-0AA0**
Width 4 width units, with keys	**6AG1057-1AA00-0AA3**
Width 8 width units	**6AG1057-1AA00-0AA1**
Width 8 width units, with keys	**6AG1057-1AA00-0AA2**

Overview SIPLUS upmiter

The SIPLUS upmiter upstream device ensures reliable operation of SIPLUS devices connected to the batteries of internal combustion engines. SIPLUS upmiter provides the devices with a constant voltage supply.

Ordering data	Article No.
SIPLUS upmiter upstream device	
For reliable operation of combustion engines supplied by battery	
Output current 1.25 A (LOGO! style)	**6AG1053-1AA00-2AA0**
Output current 2.5 A (S7-200 style)	**6AG1203-1AA00-2AA0**
Output current 4 A (S7-300 style)	**6AG1305-1AA00-2AA0**

SIMATIC S7-1200

3

Brochures

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

www.siemens.com/simatic/printmaterial

CPU 1211C

Overview

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

Technical specifications

	6ES7211-1BE40-0XB0 CPU 1211C AC/DC/relay	**6ES7211-1AE40-0XB0** CPU 1211C DC/DC/DC	**6ES7211-1HE40-0XB0** CPU 1211C DC/DC/relay
Supply voltage			
24 V DC		Yes	Yes
120 V AC	Yes		
230 V AC	Yes		
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
Power losses			
Power loss, typ.	10 W	8 W	8 W
Memory			
Work memory			
• integrated	30 kbyte	30 kbyte	30 kbyte
Load memory			
• integrated	1 Mbyte	1 Mbyte	1 Mbyte
• Plug-in (SIMATIC Memory Card), max.	2 Gbyte; with SIMATIC memory card	2 Gbyte; with SIMATIC memory card	2 Gbyte; with SIMATIC memory card
Backup			
• without battery	Yes	Yes	Yes
CPU processing times			
for bit operations, typ.	0.085 µs; / Operation	0.085 µs; / Operation	0.085 µs; / Operation
for word operations, typ.	1.7 µs; / Operation	1.7 µs; / Operation	1.7 µs; / Operation
for floating point arithmetic, typ.	2.3 µs; / Operation	2.3 µs; / Operation	2.3 µs; / Operation
Data areas and their retentivity			
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			
Process image			
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes

Technical specifications (continued)

	6ES7211-1BE40-0XB0 CPU 1211C AC/DC/relay	6ES7211-1AE40-0XB0 CPU 1211C DC/DC/DC	6ES7211-1HE40-0XB0 CPU 1211C DC/DC/relay
Digital inputs			
Number of digital inputs	6; integrated	6; integrated	6; integrated
• of which, inputs usable for technological functions	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)
Digital outputs			
Number of digital outputs	4; Relays	4	4; Relays
• of which high-speed outputs		4; 100 kHz Pulse Train Output	
Analog inputs			
Integrated channels (AI)	2; 0 to 10 V	2; 0 to 10 V	2; 0 to 10 V
Input ranges			
• Voltage	Yes	Yes	Yes
1st interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Functionality			
• PROFINET IO Device	Yes	Yes	Yes
• PROFINET IO Controller	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes
• UDP	Yes	Yes	Yes
Web server			
• supported	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		4	
Limit frequency (pulse)		100 kHz	
Ambient conditions			
Operating temperature			
• Min.	-20 °C	-20 °C	-20 °C
• max.	60 °C	60 °C	60 °C
Configuration			
programming			
• Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
Dimensions			
Width	90 mm	90 mm	90 mm
Height	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm
Weights			
Weight, approx.	420 g	370 g	380 g

CPU 1211C

Ordering data	Article No.
CPU 1211C	
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 µs per operation; 6 digital inputs, 4 digital outputs (relays), 2 analog inputs; expandable by up to 3 communication modules and 1 signal board/communication board; digital inputs can be used as HSC at 100 kHz	**6ES7211-1BE40-0XB0**
Compact CPU, DC/DC/DC; integrated program/data memory 25 KB, load memory 1 MB; 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/communication 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	**6ES7211-1AE40-0XB0**
Compact CPU, DC/DC/relay; integrated program/data memory 25 KB, load memory 1 MB; 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/communication board; digital inputs can be used as HSC at 100 kHz	**6ES7211-1HE40-0XB0**
SB 1221 signal board	
4 inputs, 5 V DC, 200 kHz	**6ES7221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	**6ES7221-3BD30-0XB0**
SB 1222 signal board	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6ES7222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6ES7222-1BD30-0XB0**

	Article No.
SB 1223 signal board	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	**6ES7223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6ES7223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6ES7223-3BD30-0XB0**
SB 1231 signal board	**6ES7231-4HA30-0XB0**
1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	
SB 1231 thermocouple signal board	**6ES7231-5QA30-0XB0**
1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	
SB 1231 RTD signal board	**6ES7231-5PA30-0XB0**
1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	
SB 1232 signal board	**6ES7232-4HA30-0XB0**
1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	
CB 1241 RS485 communication board	**6ES7241-1CH30-1XB0**
For point-to-point connection, with 1 RS485 interface	
Simulator (optional)	
8 input switches, for CPU 1211C / CPU 1212C	**6ES7274-1XF30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC02-0AA0**
12 MB	**6ES7954-8LE02-0AA0**
24 MB	**6ES7954-8LF02-0AA0**
2 GB	**6ES7954-8LP01-0AA0**
Terminal block (spare part)	
For CPU 1211C/1212C	
For DI, with 14 screws, tin-plated; 4 units	**6ES7292-1AH30-0XA0**
For DO, with 8 screws, tin-plated; 4 units	**6ES7292-1AP30-0XA0**
For AI, with 3 screws, tin-plated; 4 units	**6ES7292-1BC30-0XA0**
RJ45 cable grip	
4 items per pack	
Single port	**6ES7290-3AA30-0XA0**
Front flap set (spare part)	
For CPU 1211C/1212C	**6ES7291-1AA30-0XA0**

Ordering data

	Article No.
S7-1200 automation system, System Manual	
For SIMATIC S7-1200 and STEP 7 Basic	
German	**6ES7298-8FA30-8AH0**
English	**6ES7298-8FA30-8BH0**
French	**6ES7298-8FA30-8CH0**
Spanish	**6ES7298-8FA30-8DH0**
Italian	**6ES7298-8FA30-8EH0**
Chinese	**6ES7298-8FA30-8KH0**
S7-1200 automation system, Easy Book	
Brief instructions	
German	**6ES7298-8FA30-8AQ0**
English	**6ES7298-8FA30-8BQ0**
French	**6ES7298-8FA30-8CQ0**
Spanish	**6ES7298-8FA30-8DQ0**
Italian	**6ES7298-8FA30-8EQ0**
Chinese	**6ES7298-8FA30-8KQ0**

	Article No.
STEP 7 Professional / Basic V13	
Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64 bit), Windows 7 Enterprise SP1 (64 bit), Windows 7 Ultimate SP1 (64 bit), Windows 8.1 (64 bit), Windows 8.1 Professional (64 bit), Windows 8.1 Enterprise (64 bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Form of delivery: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V13, Floating License	**6ES7822-1AA03-0YA5**
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E-mail address required for delivery	

1) For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

CPU 1212C

Overview

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

Technical specifications

	6ES7212-1BE40-0XB0 CPU 1212C AC/DC/relay	**6ES7212-1AE40-0XB0** CPU 1212C DC/DC/DC	**6ES7212-1HE40-0XB0** CPU 1212C DC/DC/relay
Supply voltage			
24 V DC		Yes	Yes
120 V AC	Yes		
230 V AC	Yes		
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
Power losses			
Power loss, typ.	11 W	9 W	9 W
Memory			
Work memory			
• integrated	50 kbyte	50 kbyte	50 kbyte
Load memory			
• integrated	1 Mbyte	1 Mbyte	1 Mbyte
• Plug-in (SIMATIC Memory Card), max.	2 Gbyte; with SIMATIC memory card	2 Gbyte; with SIMATIC memory card	2 Gbyte; with SIMATIC memory card
Backup			
• without battery	Yes	Yes	Yes
CPU processing times			
for bit operations, typ.	0.085 µs; / Operation	0.085 µs; / Operation	0.085 µs; / Operation
for word operations, typ.	1.7 µs; / Operation	1.7 µs; / Operation	1.7 µs; / Operation
for floating point arithmetic, typ.	2.3 µs; / Operation	2.3 µs; / Operation	2.3 µs; / Operation
Data areas and their retentivity			
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			
Process image			
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes

Technical specifications (continued)

	6ES7212-1BE40-0XB0 CPU 1212C AC/DC/relay	6ES7212-1AE40-0XB0 CPU 1212C DC/DC/DC	6ES7212-1HE40-0XB0 CPU 1212C DC/DC/relay
Digital inputs			
Number of digital inputs	8; integrated	8; integrated	8; integrated
• of which, inputs usable for technological functions	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)	6; HSC (High Speed Counting)
Digital outputs			
Number of digital outputs	6; Relays	6	6; Relays
• of which high-speed outputs		4; 100 kHz Pulse Train Output	
Analog inputs			
Integrated channels (AI)	2; 0 to 10 V	2; 0 to 10 V	2; 0 to 10 V
Input ranges			
• Voltage	Yes	Yes	Yes
1st interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Functionality			
• PROFINET IO Device	Yes	Yes	Yes
• PROFINET IO Controller	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes
• UDP	Yes	Yes	Yes
Web server			
• supported	Yes	Yes	Yes
Integrated Functions			
Number of counters	4	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	4	4	
Limit frequency (pulse)		100 kHz	
Ambient conditions			
Operating temperature			
• Min.	-20 °C	-20 °C	-20 °C
• max.	60 °C	60 °C	60 °C
Configuration			
programming			
• Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
Dimensions			
Width	90 mm	90 mm	90 mm
Height	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm
Weights			
Weight, approx.	425 g	370 g	385 g

CPU 1212C

Ordering data	Article No.
CPU 1212C	
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 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/communication board; digital inputs can be used as HSC at 100 kHz	**6ES7212-1BE40-0XB0**
Compact CPU, DC/DC/DC; integrated program/data memory 25 KB, load memory 1 MB; 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/communication 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	**6ES7212-1AE40-0XB0**
Compact CPU, DC/DC/relay; integrated program/data memory 25 KB, load memory 2 MB; power supply 24 V DC; Boolean execution times 0.1 µs per operation; 8 digital inputs, 6 digital outputs (relays), 1 analog inputs; expandable by up to 3 communication modules, 2 signal modules, and 1 signal board/communication board; digital inputs can be used as HSC at 100 kHz	**6ES7212-1HE40-0XB0**
SB 1221 signal board	
4 inputs, 5 V DC, 200 kHz	**6ES7221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	**6ES7221-3BD30-0XB0**
SB 1222 signal board	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6ES7222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6ES7222-1BD30-0XB0**

	Article No.
SB 1223 signal board	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	**6ES7223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6ES7223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6ES7223-3BD30-0XB0**
SB 1231 signal board	**6ES7231-4HA30-0XB0**
1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	
SB 1231 thermocouple signal board	**6ES7231-5QA30-0XB0**
1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	
SB 1231 RTD signal board	**6ES7231-5PA30-0XB0**
1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	
SB 1232 signal board	**6ES7232-4HA30-0XB0**
1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	
CB 1241 RS485 communication board	**6ES7241-1CH30-1XB0**
For point-to-point connection, with 1 RS485 interface	
Simulator (optional)	
8 input switches, for CPU 1211C / CPU 1212C	**6ES7274-1XF30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC02-0AA0**
12 MB	**6ES7954-8LE02-0AA0**
24 MB	**6ES7954-8LF02-0AA0**
2 GB	**6ES7954-8LP01-0AA0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
For connecting digital/analog signal modules; length 2 m	
Starter box CPU 1212C AC/DC/relay	**6ES7212-1BD34-4YB0**
Complete offer SIMATIC S7-1200, starter box, comprising: CPU 1212C AC/DC/relay, simulator, STEP 7 BASIC CD, manual CD, info material, in Systainer	
Terminal block (spare part)	
For CPU 1211C/1212C	
For DI, with 14 screws, tin-plated; 4 units	**6ES7292-1AH30-0XA0**
For DO, with 8 screws, tin-plated; 4 units	**6ES7292-1AP30-0XA0**
For AI, with 3 screws, tin-plated; 4 units	**6ES7292-1BC30-0XA0**

Ordering data

	Article No.
RJ45 cable grip	
4 items per pack	
Single port	**6ES7290-3AA30-0XA0**
Front flap set (spare part)	
For CPU 1211C/1212C	**6ES7291-1AA30-0XA0**
S7-1200 automation system, System Manual	
For SIMATIC S7-1200 and STEP 7 Basic	
German	**6ES7298-8FA30-8AH0**
English	**6ES7298-8FA30-8BH0**
French	**6ES7298-8FA30-8CH0**
Spanish	**6ES7298-8FA30-8DH0**
Italian	**6ES7298-8FA30-8EH0**
Chinese	**6ES7298-8FA30-8KH0**
S7-1200 automation system, Easy Book	
Brief instructions	
German	**6ES7298-8FA30-8AQ0**
English	**6ES7298-8FA30-8BQ0**
French	**6ES7298-8FA30-8CQ0**
Spanish	**6ES7298-8FA30-8DQ0**
Italian	**6ES7298-8FA30-8EQ0**
Chinese	**6ES7298-8FA30-8KQ0**

	Article No.
STEP 7 Professional / Basic V13	
Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64 bit), Windows 7 Enterprise SP1 (64 bit), Windows 7 Ultimate SP1 (64 bit), Windows 8.1 (64 bit), Windows 8.1 Professional (64 bit), Windows 8.1 Enterprise (64 bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Form of delivery: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V13, Floating License	**6ES7822-1AA03-0YA5**
STEP 7 Professional V13, Floating License, software download incl. license key[1]	**6ES7822-1AE03-0YA5**
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[1] For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

CPU 1214C

Overview

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

Technical specifications

	6ES7214-1BG40-0XB0 CPU 1214C AC/DC/relay	**6ES7214-1AG40-0XB0** CPU 1214C DC/DC/DC	**6ES7214-1HG40-0XB0** CPU 1214C DC/DC/relay
Supply voltage			
24 V DC		Yes	Yes
120 V AC	Yes		
230 V AC	Yes		
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
Power losses			
Power loss, typ.	14 W	12 W	12 W
Memory			
Work memory			
• integrated	75 kbyte	75 kbyte	75 kbyte
Load memory			
• integrated	4 Mbyte	4 Mbyte	4 Mbyte
• Plug-in (SIMATIC Memory Card), max.	2 Gbyte; with SIMATIC memory card	2 Gbyte; with SIMATIC memory card	2 Gbyte; with SIMATIC memory card
Backup			
• without battery	Yes	Yes	Yes
CPU processing times			
for bit operations, typ.	0.085 µs; / Operation	0.085 µs; / Operation	0.085 µs; / Operation
for word operations, typ.	1.7 µs; / Operation	1.7 µs; / Operation	1.7 µs; / Operation
for floating point arithmetic, typ.	2.3 µs; / Operation	2.3 µs; / Operation	2.3 µs; / Operation
Data areas and their retentivity			
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			
Process image			
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes

Technical specifications (continued)

	6ES7214-1BG40-0XB0 CPU 1214C AC/DC/relay	6ES7214-1AG40-0XB0 CPU 1214C DC/DC/DC	6ES7214-1HG40-0XB0 CPU 1214C DC/DC/relay
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)
Digital outputs			
Number of digital outputs	10; Relays	10	10; Relays
• of which high-speed outputs		4; 100 kHz Pulse Train Output	
Analog inputs			
Integrated channels (AI)	2; 0 to 10 V	2; 0 to 10 V	2; 0 to 10 V
Input ranges			
• Voltage	Yes	Yes	Yes
1st interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet	Ethernet	Ethernet
Functionality			
• PROFINET IO Device	Yes	Yes	Yes
• PROFINET IO Controller	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes
• UDP	Yes	Yes	Yes
Web server			
• supported	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	4	4	4
Limit frequency (pulse)		100 kHz	
Ambient conditions			
Operating temperature			
• Min.	-20 °C	-20 °C	-20 °C
• max.	60 °C	60 °C	60 °C
Configuration			
programming			
• Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
Dimensions			
Width	110 mm	110 mm	110 mm
Height	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm
Weights			
Weight, approx.	475 g	415 g	435 g

CPU 1214C

Ordering data

	Article No.
CPU 1214C	
Compact CPU, AC/DC/relay; integral program/data memory 50 KB, load memory 2 MB; 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/communication board; digital inputs can be used as HSC at 100 kHz	**6ES7214-1BG40-0XB0**
Compact CPU, DC/DC/DC; integrated program/data memory 50 KB, load memory 2 MB; 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/communication 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	**6ES7214-1AG40-0XB0**
Compact CPU, DC/DC/relay; integrated program/data memory 50 KB, load memory 2 MB; 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/communication board; digital inputs can be used as HSC at 100 kHz	**6ES7214-1HG40-0XB0**
SB 1221 signal board	
4 inputs, 5 V DC, 200 kHz	**6ES7221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	**6ES7221-3BD30-0XB0**
SB 1222 signal board	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6ES7222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6ES7222-1BD30-0XB0**

	Article No.
SB 1223 signal board	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	**6ES7223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6ES7223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6ES7223-3BD30-0XB0**
SB 1231 signal board	**6ES7231-4HA30-0XB0**
1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	
SB 1231 thermocouple signal board	**6ES7231-5QA30-0XB0**
1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	
SB 1231 RTD signal board	**6ES7231-5PA30-0XB0**
1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	
SB 1232 signal board	**6ES7232-4HA30-0XB0**
1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	
CB 1241 RS485 communication board	**6ES7241-1CH30-1XB0**
For point-to-point connection, with 1 RS485 interface	
Simulator (optional)	
14 input switches, for CPU 1214C	**6ES7274-1XH30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC02-0AA0**
12 MB	**6ES7954-8LE02-0AA0**
24 MB	**6ES7954-8LF02-0AA0**
2 GB	**6ES7954-8LP01-0AA0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
For connecting digital/analog signal modules; length 2 m	
Terminal block (spare part)	
For CPU 1214C	
For DI, with 20 screws, tin-plated; 4 units	**6ES7292-1AV30-0XA0**
For DO, with 12 screws, tin-plated; 4 units	**6ES7292-1AM30-0XA0**
For AI, with 3 screws, tin-plated; 4 units	**6ES7292-1BC30-0XA0**
RJ45 cable grip	
4 items per pack	
Single port	**6ES7290-3AA30-0XA0**
Front flap set (spare part)	
For CPU 1214C	**6ES7291-1AB30-0XA0**

Ordering data

	Article No.
S7-1200 automation system, System Manual	
For SIMATIC S7-1200 and STEP 7 Basic	
German	**6ES7298-8FA30-8AH0**
English	**6ES7298-8FA30-8BH0**
French	**6ES7298-8FA30-8CH0**
Spanish	**6ES7298-8FA30-8DH0**
Italian	**6ES7298-8FA30-8EH0**
Chinese	**6ES7298-8FA30-8KH0**
S7-1200 automation system, Easy Book	
Brief instructions	
German	**6ES7298-8FA30-8AQ0**
English	**6ES7298-8FA30-8BQ0**
French	**6ES7298-8FA30-8CQ0**
Spanish	**6ES7298-8FA30-8DQ0**
Italian	**6ES7298-8FA30-8EQ0**
Chinese	**6ES7298-8FA30-8KQ0**

	Article No.
STEP 7 Professional / Basic V13	
Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64 bit), Windows 7 Enterprise SP1 (64 bit), Windows 7 Ultimate SP1 (64 bit), Windows 8.1 (64 bit), Windows 8.1 Professional (64 bit), Windows 8.1 Enterprise (64 bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Form of delivery: German, English, Chinese, Italian, French, Spanish	
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E-mail address required for delivery	

1) For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

CPU 1215C

Overview

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

Technical specifications

	6ES7215-1BG40-0XB0 CPU 1215C AC/DC/relay	**6ES7215-1AG40-0XB0** CPU 1215C DC/DC/DC	**6ES7215-1HG40-0XB0** CPU 1215C DC/DC/relay
Supply voltage			
24 V DC		Yes	Yes
120 V AC	Yes		
230 V AC	Yes		
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
Power losses			
Power loss, typ.	14 W	12 W	12 W
Memory			
Work memory			
• integrated	100 kbyte	100 kbyte	100 kbyte
Load memory			
• integrated	4 Mbyte	4 Mbyte	4 Mbyte
• Plug-in (SIMATIC Memory Card), max.	2 Gbyte; with SIMATIC memory card	2 Gbyte; with SIMATIC memory card	2 Gbyte; with SIMATIC memory card
Backup			
• without battery	Yes	Yes	Yes
CPU processing times			
for bit operations, typ.	0.085 µs; / Operation	0.085 µs; / Operation	0.085 µs; / Operation
for word operations, typ.	1.7 µs; / Operation	1.7 µs; / Operation	1.7 µs; / Operation
for floating point arithmetic, typ.	2.3 µs; / Operation	2.3 µs; / Operation	2.3 µs; / Operation
Data areas and their retentivity			
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			
Process image			
• Inputs, adjustable	1 kbyte	1 kbyte	1 kbyte
• Outputs, adjustable	1 kbyte	1 kbyte	1 kbyte
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes

Technical specifications (continued)

	6ES7215-1BG40-0XB0 CPU 1215C AC/DC/relay	6ES7215-1AG40-0XB0 CPU 1215C DC/DC/DC	6ES7215-1HG40-0XB0 CPU 1215C DC/DC/relay
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)
Digital outputs			
Number of digital outputs	10; Relays	10	10; Relays
• of which high-speed outputs		4; 100 kHz Pulse Train Output	
Analog inputs			
Integrated channels (AI)	2; 0 to 10 V	2; 0 to 10 V	2; 0 to 10 V
Input ranges			
• Voltage	Yes	Yes	Yes
Analog outputs			
Integrated channels (AO)	2; 0 to 20mA	2; 0 to 20mA	2; 0 to 20mA
1st interface			
Interface type	PROFINET	PROFINET	PROFINET
Functionality			
• PROFINET IO Device	Yes	Yes	Yes
• PROFINET IO Controller	Yes	Yes	Yes
Communication functions			
S7 communication			
• supported	Yes	Yes	Yes
Open IE communication			
• TCP/IP	Yes	Yes	Yes
• ISO-on-TCP (RFC1006)	Yes	Yes	Yes
• UDP	Yes	Yes	Yes
Web server			
• supported	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	4	4	4
Limit frequency (pulse)		100 kHz	
Ambient conditions			
Operating temperature			
• Min.	-20 °C	-20 °C	-20 °C
• max.	60 °C	60 °C	60 °C
Configuration			
programming			
• Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
Dimensions			
Width	130 mm	130 mm	130 mm
Height	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm
Weights			
Weight, approx.	585 g	520 g	550 g

CPU 1215C

Ordering data	Article No.
CPU 1215C	
Compact CPU, AC/DC/relay; integral program/data memory 100 KB, load memory 4 MB; wide-range power supply 85 ... 264 V AC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs, 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules and 1 signal board/communication board; digital inputs can be used as HSC at 100 kHz	**6ES7215-1BG40-0XB0**
Compact CPU, DC/DC/DC; integrated program/data memory 100 KB, load memory 4 MB; power supply 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs, 2 analog inputs, 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication 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	**6ES7215-1AG40-0XB0**
Compact CPU, DC/DC/relay; integrated program/data memory 100 KB, load memory 4 MB; power supply 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs, 10 digital outputs (relays), 2 analog inputs, 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules, and 1 signal board/communication board; digital inputs can be used as HSC at 100 kHz	**6ES7215-1HG40-0XB0**
SB 1221 signal board	
4 inputs, 5 V DC, 200 kHz	**6ES7221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	**6ES7221-3BD30-0XB0**
SB 1222 signal board	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6ES7222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6ES7222-1BD30-0XB0**

	Article No.
SB 1223 signal board	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	**6ES7223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6ES7223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6ES7223-3BD30-0XB0**
SB 1231 signal board	**6ES7231-4HA30-0XB0**
1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	
SB 1231 thermocouple signal board	**6ES7231-5QA30-0XB0**
1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	
RTD signal board SB 1231	**6ES7231-5PA30-0XB0**
1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	
SB 1232 signal board	**6ES7232-4HA30-0XB0**
1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	
CB 1241 RS485 communication board	**6ES7241-1CH30-1XB0**
For point-to-point connection, with 1 RS485 interface	
BB 1297 battery board	**6ES7297-0AX30-0XA0**
For long-term backup of real-time clock; can be plugged into the signal board slot of an S7-1200 CPU in FW version 3.0 or higher; battery (CR 1025) is not included	
Simulator (optional)	
14 input switches, for CPU 1214C and CPU 1215C	**6ES7274-1XH30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC02-0AA0**
12 MB	**6ES7954-8LE02-0AA0**
24 MB	**6ES7954-8LF02-0AA0**
2 GB	**6ES7954-8LP01-0AA0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
For connecting digital/analog signal modules; length 2 m	
Terminal block (spare part)	
For CPU 1215C	
For DI, with 20 screws, tin-plated; 4 units	**6ES7292-1AV30-0XA0**
For DO, with 12 screws, tin-plated; 4 units	**6ES7292-1AM30-0XA0**
For analog units, with 6 screws, gold-plated; 4 units	**6ES7292-1BF30-0XB0**

Ordering data

	Article No.
Front flap set (spare part)	
For CPU 1215C	**6ES7291-1AC30-0XA0**
RJ45 cable grip	
4 items per pack	
Single port	**6ES7290-3AA30-0XA0**
Dual port	**6ES7290-3AB30-0XA0**
S7-1200 automation system, System Manual	
For SIMATIC S7-1200 and STEP 7 Basic	
German	**6ES7298-8FA30-8AH0**
English	**6ES7298-8FA30-8BH0**
French	**6ES7298-8FA30-8CH0**
Spanish	**6ES7298-8FA30-8DH0**
Italian	**6ES7298-8FA30-8EH0**
Chinese	**6ES7298-8FA30-8KH0**
S7-1200 automation system, Easy Book	
Brief instructions	
German	**6ES7298-8FA30-8AQ0**
English	**6ES7298-8FA30-8BQ0**
French	**6ES7298-8FA30-8CQ0**
Spanish	**6ES7298-8FA30-8DQ0**
Italian	**6ES7298-8FA30-8EQ0**
Chinese	**6ES7298-8FA30-8KQ0**

	Article No.
STEP 7 Professional / Basic V13	
Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64 bit), Windows 7 Enterprise SP1 (64 bit), Windows 7 Ultimate SP1 (64 bit), Windows 8.1 (64 bit), Windows 8.1 Professional (64 bit), Windows 8.1 Enterprise (64 bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Form of delivery: German, English, Chinese, Italian, French, Spanish	
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E-mail address required for delivery	

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CPU 1217C

Overview

- The compact high-performance CPU
- With 24 integrated I/Os
- Expandable by:
  - 1 Signal Board (SB) or Communication Board (CB)
  - 8 signal modules (SM)
  - Max. 3 communication modules (CM)

Technical specifications

	6ES7217-1AG40-0XB0 CPU 1217C DC/DC/DC
Supply voltage	
24 V DC	Yes
Encoder supply	
24 V encoder supply	
• 24 V	Permissible range: 20.4 to 28.8 V
Power losses	
Power loss, typ.	12 W
Memory	
Work memory	
• integrated	125 kbyte
Load memory	
• integrated	4 Mbyte
• Plug-in (SIMATIC Memory Card), max.	2 Gbyte; with SIMATIC memory card
Backup	
• without battery	Yes
CPU processing times	
for bit operations, typ.	0.085 µs; / Operation
for word operations, typ.	1.7 µs; / Operation
for floating point arithmetic, typ.	2.3 µs; / Operation
Data areas and their retentivity	
Flag	
• Number, max.	8 kbyte; Size of bit memory address area
Address area	
Process image	
• Inputs, adjustable	1 kbyte
• Outputs, adjustable	1 kbyte
Time of day	
Clock	
• Hardware clock (real-time clock)	Yes
Digital inputs	
Number of digital inputs	14; integrated
• of which, inputs usable for technological functions	6; HSC (High Speed Counting)
Digital outputs	
Number of digital outputs	10
• of which high-speed outputs	4; 1 MHz Pulse Train Output

	6ES7217-1AG40-0XB0 CPU 1217C DC/DC/DC
Analog inputs	
Integrated channels (AI)	2; 0 to 10 V
Input ranges	
• Voltage	Yes
Analog outputs	
Integrated channels (AO)	2; 0 to 20 mA
1st interface	
Interface type	PROFINET
Functionality	
• PROFINET IO Device	Yes
• PROFINET IO Controller	Yes
Communication functions	
S7 communication	
• supported	Yes
Open IE communication	
• TCP/IP	Yes
• ISO-on-TCP (RFC1006)	Yes
• UDP	Yes
Web server	
• supported	Yes
Integrated Functions	
Number of counters	6
Counter frequency (counter) max.	1 MHz
Frequency meter	Yes
controlled positioning	Yes
PID controller	Yes
Number of alarm inputs	4
Number of pulse outputs	4
Limit frequency (pulse)	1 MHz
Ambient conditions	
Operating temperature	
• Min.	-20 °C
• max.	60 °C
Configuration	
programming	
• Programming language	
- LAD	Yes
- FBD	Yes
- SCL	Yes
Dimensions	
Width	150 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	530 g

Ordering data

	Article No.
CPU 1217C	
Compact CPU, DC/DC/DC; integrated program/data memory 125 KB, load memory 4 MB; power supply 24 V DC; Boolean execution times 0.085 µs per operation; 14 digital inputs (10 digital 24 V DC inputs, 4 digital 1.5 V DC differential inputs), 10 digital outputs (6 digital 24 V DC outputs, 4 digital 1.5 V DC differential outputs), 2 analog inputs, 2 analog outputs; expandable by up to 3 communication modules, 8 signal modules, and 1 Signal Board/Communication Board; digital inputs can be used as HSC at 1 MHz, 24 V DC digital outputs can be used as pulse outputs (PTO) or pulse-width modulated outputs (PWM) at 100 kHz	**6ES7217-1AG40-0XB0**
SB 1221 signal board	
4 inputs, 5 V DC, 200 kHz	**6ES7221-3AD30-0XB0**
4 inputs, 24 V DC, 200 kHz	**6ES7221-3BD30-0XB0**
SB 1222 signal board	
4 outputs, 5 V DC, 0.1 A, 200 kHz	**6ES7222-1AD30-0XB0**
4 outputs, 24 V DC, 0.1 A, 200 kHz	**6ES7222-1BD30-0XB0**
SB 1223 signal board	
2 inputs, 24 V DC, IEC type 1 current sinking; 2 x 24 V DC transistor outputs, 0.5 A, 5 W; can be used as HSC at up to 30 kHz	**6ES7223-0BD30-0XB0**
2 inputs, 5 V DC, 200 kHz 2 outputs 5 V DC, 0.1 A, 200 kHz	**6ES7223-3AD30-0XB0**
2 inputs, 24 V DC, 200 kHz 2 outputs 24 V DC, 0.1 A, 200 kHz	**6ES7223-3BD30-0XB0**
SB 1231 signal board	**6ES7231-4HA30-0XB0**
1 analog input, ±10 V with 12 bits or 0 ... 20 mA with 11 bits	
SB 1231 thermocouple signal board	**6ES7231-5QA30-0XB0**
1 input +/- 80 mV, resolution 15 bits + sign, thermocouples type J, K	
SB 1231 RTD signal board	**6ES7231-5PA30-0XB0**
1 input for resistance temperature sensors Pt 100, Pt 200, Pt 500, Pt 1000, resolution 15 bits + sign	

	Article No.
SB 1232 signal board	**6ES7232-4HA30-0XB0**
1 analog output, ±10 V with 12 bits or 0 to 20 mA with 11 bits	
CB 1241 RS485 communication board	**6ES7241-1CH30-1XB0**
For point-to-point connection, with 1 RS485 interface	
BB 1297 battery board	**6ES7297-0AX30-0XA0**
For long-term backup of real-time clock; can be plugged into the signal board slot of an S7-1200 CPU in FW version 3.0 or higher; battery (CR 1025) is not included	
Simulator (optional)	
Digital, 14 input switches, for CPU 1217C	**6ES7274-1XK30-0XA0**
Analog, 2 potentiometer inputs	**6ES7274-1XA30-0XA0**
SIMATIC Memory Card (optional)	
4 MB	**6ES7954-8LC02-0AA0**
12 MB	**6ES7954-8LE02-0AA0**
24 MB	**6ES7954-8LF02-0AA0**
2 GB	**6ES7954-8LP01-0AA0**
Extension cable for two-tier configuration	**6ES7290-6AA30-0XA0**
For connecting digital/analog signal modules; length 2 m	
Terminal block (spare part)	
For CPU 1217C	
For DI, with 10 screws, tin-plated; 4 units	**6ES7292-1AK30-0XA0**
For DI, with 10 screws, tin-plated; 4 units	**6ES7292-1AR30-0XA0**
For DO, with 18 screws, tin-plated; 4 units	**6ES7292-1AT30-0XA0**
For analog units, with 6 screws, gold-plated; 4 units	**6ES7292-1BF30-0XB0**
RJ45 cable grip	
4 items per pack	
Dual port	**6ES7290-3AB30-0XA0**

CPU 1217C

Ordering data	Article No.
S7-1200 automation system, System Manual	
For SIMATIC S7-1200 and STEP 7 Basic	
German	**6ES7298-8FA30-8AH0**
English	**6ES7298-8FA30-8BH0**
French	**6ES7298-8FA30-8CH0**
Spanish	**6ES7298-8FA30-8DH0**
Italian	**6ES7298-8FA30-8EH0**
Chinese	**6ES7298-8FA30-8KH0**
S7-1200 automation system, Easy Book	
Brief instructions	
German	**6ES7298-8FA30-8AQ0**
English	**6ES7298-8FA30-8BQ0**
French	**6ES7298-8FA30-8CQ0**
Spanish	**6ES7298-8FA30-8DQ0**
Italian	**6ES7298-8FA30-8EQ0**
Chinese	**6ES7298-8FA30-8KQ0**

	Article No.
STEP 7 Professional / Basic V13	
Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64 bit), Windows 7 Enterprise SP1 (64 bit), Windows 7 Ultimate SP1 (64 bit), Windows 8.1 (64 bit), Windows 8.1 Professional (64 bit), Windows 8.1 Enterprise (64 bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Form of delivery: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V13, Floating License	**6ES7822-1AA03-0YA5**
STEP 7 Professional V13, Floating License, software download incl. license key[1)]	**6ES7822-1AE03-0YA5**
E-mail address required for delivery	
STEP 7 Basic V13, Floating License	**6ES7822-0AA03-0YA5**
STEP 7 Basic V13, Floating License, software download incl. license key[1)]	**6ES7822-0AE03-0YA5**
E-mail address required for delivery	

1) For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

Overview

- Digital inputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs
- From +60 °C to +70 °C, max. 50% of the inputs can be controlled simultaneously

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1221-1BF32-2XB0	**6AG1221-1BF32-4XB0**	**6AG1221-1BH32-2XB0**	**6AG1221-1BH32-4XB0**
	SM 1221 DI 8x24 VDC	SM 1221 DI 8x24 VDC	SM 1221 DI 16x24 VDC	SM 1221 DI 16x24 VDC
Based on	**6ES7221-1BF32-0XB0**	**6ES7221-1BF32-0XB0**	**6ES7221-1BH32-0XB0**	**6ES7221-1BH32-0XB0**
Ambient conditions				
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
• Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
• Resistance				
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			
Climatic and mechanical conditions for storage and transport				
Climatic conditions for storage and transport				
• Free fall				
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package			
• Temperature				
- Permissible temperature range	-40 °C to +70 °C			
Mechanical and climatic conditions during operation				
Climatic conditions in operation				
• Temperature				
- Min.	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C
- max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated inputs 4 (no adjacent points) for horizontal mounting position	60 °C; = Tmax	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated inputs 8 (no adjacent points) for horizontal mounting position	60 °C; = Tmax

SIPLUS SM 1221 digital input modules

Ordering data

	Article No.
Digital input SIPLUS SM 1221 signal module	
(extended temperature range and medial exposure)	
8 inputs, 24 V DC, isolated, current sourcing/sinking	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1221-1BF32-4XB0**
• -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1221-1BF32-2XB0**
16 inputs, 24 V DC, isolated, current sourcing/sinking	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1221-1BH32-4XB0**
• -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1221-1BH32-2XB0**

	Article No.
Accessories	See SIMATIC S7-1200 SM 1221 digital input, catalog ST 70 · 2013, page 3/42

Overview

- Digital outputs as a supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional outputs
- From +60 °C to +70 °C, max. 50% of the inputs can be controlled simultaneously

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1222-1BF32-2XB0 SM 1222 DQ 8x24 VDC	**6AG1222-1BF32-4XB0** SM 1222 DQ 8x24 VDC	**6AG1222-1BH32-2XB0** SM 1222 DQ 16x24 VDC	**6AG1222-1BH32-4XB0** SM 1222 DQ 16x24 VDC
Based on	**6ES7222-1BF32-0XB0**	**6ES7222-1BF32-0XB0**	**6ES7222-1BH32-0XB0**	**6ES7222-1BH32-0XB0**
Ambient conditions				
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
• Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
• Resistance				
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			
Climatic and mechanical conditions for storage and transport				
Climatic conditions for storage and transport				
• Free fall				
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package			
• Temperature				
- Permissible temperature range	-40 °C to +70 °C			
Mechanical and climatic conditions during operation				
Climatic conditions in operation				
• Temperature				
- Min.	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C
- max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 4 (no adjacent points) for horizontal mounting position	60 °C; = Tmax	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 8 (no adjacent points) for horizontal mounting position	60 °C; = Tmax

Technical specifications (continued)

	6AG1222-1HF32-2XB0 SM 1222 DQ 8xRelay	6AG1222-1HF32-4XB0 SM 1222 DQ 8xRelay	6AG1222-1HH32-2XB0 SM 1222 DQ 16xRelay	6AG1222-1HH32-4XB0 SM 1222 DQ 16xRelay
Based on	**6ES7222-1HF32-0XB0**	**6ES7222-1HF32-0XB0**	**6ES7222-1HH32-0XB0**	**6ES7222-1HH32-0XB0**
Ambient conditions				
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
• at cold restart, minimum	-25 °C			
• Relative humidity				
- with condensation, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
- With condensation, tested in accordance with IEC 60068-2-38, maximum		100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
• Resistance				
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			
Climatic and mechanical conditions for storage and transport				
Climatic conditions for storage and transport				
• Free fall				
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package			
• Temperature				
- Permissible temperature range	-40 °C to +70 °C			
Mechanical and climatic conditions during operation				
Climatic conditions in operation				
• Temperature				
- Min.	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C
- max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 4 (no adjacent points) for horizontal mounting position	60 °C; = Tmax	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 8 (no adjacent points) for horizontal mounting position	60 °C; = Tmax
- Permissible temperature change	5°C to 55°C, 3°C / minute			

Ordering data

	Article No.
Digital output SIPLUS SM 1222 signal module	
(Extended temperature range and medial exposure)	
8 outputs, 24 V DC; 0.5 A, 5 W, isolated	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1222-1BF32-4XB0**
• -25 ... +70 °C, from +60 … +70°C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1222-1BF32-2XB0**
16 outputs, 24 V DC; 0.5 A, 5 W, isolated	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1222-1BH32-4XB0**
• -25 ... +70 °C, from +60 … +70°C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1222-1BH32-2XB0**
8 outputs, 5 ... 30 V DC/ 5 ... 250 V AC, relay 2 A, 30 W DC/200 W AC	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1222-1HF32-4XB0**
• -25 ... +70 °C, from +60 … +70°C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1222-1HF32-2XB0**
16 outputs, 5 ... 30 V DC/ 5 ... 250 V AC, relay 2 A, 30 W DC/200 W AC	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1222-1HH32-4XB0**
• -25 ... +70 °C, from +60 … +70°C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1222-1HH32-2XB0**
Accessories	See SIMATIC S7-1200 SM 1222 digital output, catalog ST 70 · 2013, page 3/49

Overview

- Digital inputs and outputs as supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs and outputs
- From +60 °C to +70 °C, max. 50% of the inputs can be controlled simultaneously

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table.

	6AG1223-1BH32-2XB0 SM 1223 DI 8x24 VDC, DQ 8x24 VDC	**6AG1223-1BH32-4XB0** SM 1223 DI 8x24 VDC, DQ 8x24 VDC	**6AG1223-1PH32-2XB0** SM 1223 DI 8x24 VDC, DQ 8xRelay	**6AG1223-1PH32-4XB0** SM 1223 DI 8x24 VDC, DQ 8xRelay
Based on	**6ES7223-1BH32-0XB0**	**6ES7223-1BH32-0XB0**	**6ES7223-1PH32-0XB0**	**6ES7223-1PH32-0XB0**
Ambient conditions				
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
• at cold restart, minimum	-25 °C			
• Relative humidity				
- with condensation, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
- With condensation, tested in accordance with IEC 60068-2-38, maximum		100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
• Resistance				
- to biologically active substances/conformity wit h EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			
Climatic and mechanical conditions for storage and transport				
Climatic conditions for storage and transport				
• Free fall				
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package			
• Temperature				
- Permissible temperature range	-40 °C to +70 °C			
Mechanical and climatic conditions during operation				
Climatic conditions in operation				
• Temperature				
- Min.	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C
- max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 4, inputs 4 (no adjacent points) for horizontal mounting position	60 °C; = Tmax	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 4, inputs 4 (no adjacent points) for horizontal mounting position	60 °C; = Tmax
- Permissible temperature change	5°C to 55°C, 3°C / minute			

Technical specifications (continued)

	6AG1223-1PL32-2XB0 SM 1223 DI 16x24 VDC, DQ 16xRelay	6AG1223-1PL32-4XB0 SM 1223 DI 16x24 VDC, DQ 16xRelay	6AG1223-1BL32-2XB0 SM 1223 DI 16x24 VDC, DQ 16x24 VDC	6AG1223-1BL32-4XB0 SM 1223 DI 16x24 VDC, DQ 16x24 VDC
Based on	**6ES7223-1PL32-0XB0**	**6ES7223-1PL32-0XB0**	**6ES7223-1BL32-0XB0**	**6ES7223-1BL32-0XB0**
Ambient conditions				
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
• Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
• Resistance				
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			
Climatic and mechanical conditions for storage and transport				
Climatic conditions for storage and transport				
• Free fall				
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package			
• Temperature				
- Permissible temperature range	-40 °C to +70 °C			
Mechanical and climatic conditions during operation				
Climatic conditions in operation				
• Temperature				
- Min.	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C
- max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 8, inputs 8 (no adjacent points) for horizontal mounting position	60 °C; = Tmax	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 8, inputs 8 (no adjacent points) for horizontal mounting position	60 °C; = Tmax

Ordering data

	Article No.
Digital input/output SIPLUS SM 1223 signal module	
(Extended temperature range and medial exposure)	
8 inputs, 24 V DC, IEC type 1 current sinking 8 transistor outputs, 24 V DC, 0.5 A, 5 W	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1223-1BH32-4XB0**
• -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1223-1BH32-2XB0**
16 inputs, 24 V DC, IEC type 1 current sinking 16 transistor outputs, 24 V DC, 0.5 A, 5 W	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1223-1BL32-4XB0**
• -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1223-1BL32-2XB0**
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	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1223-1PH32-4XB0**
• -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1223-1PH32-2XB0**
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	
• Suitable for areas with extraordinary medial exposure (conformal coating)	**6AG1223-1PL32-4XB0**
• -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50 %	**6AG1223-1PL32-2XB0**
Accessories	See SIMATIC S7-1200 SM 1223 digital input/output, catalog ST 70 · 2013, page 3/57

Overview

- For the convenient recording of temperatures with great accuracy
- 7 common thermocouple types can be used
- Also for the measurement of analog signals with a low level (±80 mV)
- Can easily be retrofitted to existing plant

Technical specifications

	6ES7231-5QD32-0XB0 SM 1231 TC 4x16 bit	6ES7231-5QF32-0XB0 SM 1231 TC 8x16bit
Supply voltage		
24 V DC	Yes	Yes
Input current		
Current consumption, typ.	40 mA	40 mA
from backplane bus 5 V DC, typ.	80 mA	80 mA
Power losses		
Power loss, typ.	1.5 W	1.5 W
Analog inputs		
Number of analog inputs	4; Thermocouples	4; Thermocouples
permissible input frequency for current input (destruction limit), max.	± 35 V	± 35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit	Degrees Celsius/degrees Fahrenheit
Input ranges		
• Thermocouple	Yes; J, K, T, E, R, S, N, C, TXK/XK(L); voltage range: +/-80 mV	Yes; J, K, T, E, R & S, B, N, C, TXK/XK(L); voltage range: ±80 mV
Input ranges (rated values), voltages		
• -80 mV to +80 mV	Yes	Yes
• Input resistance (-80 mV to +80 mV)	>= 1 MOhm	>= 1 MOhm
Input ranges (rated values), thermoelements		
• Type B	Yes	Yes
• Type C	Yes	Yes
• Type E	Yes	Yes
• Type J	Yes	Yes
• Type K	Yes	Yes
• Type N	Yes	Yes
• Type R	Yes	Yes
• Type S	Yes	Yes
• Type T	Yes	Yes
• Type TXK/TXK(L) to GOST	Yes	Yes
Thermocouple (TC)		
• permissible input voltage for voltage input (destruction limit), max.	+-35 V	+-35 V
• Temperature compensation		
- Parameterizable	No	No
Analog outputs		
Number of analog outputs	0	0
Analog value creation		
Measurement principle	integrating	integrating
Integrations and conversion time/resolution per channel		
• Resolution with overrange (bit including sign), max.	15 bit; + sign	15 bit; + sign
• Integration time, parameterizable	No	No
• Interference voltage suppression for interference frequency f1 in Hz	85 dB at 50 / 60 / 400 Hz	85 dB at 50 / 60 / 400 Hz
Analog value generation (in isochronous mode)		
Smoothing of measured values		
• Parameterizable	Yes	Yes
Errors/accuracies		
Repeat accuracy in steady state at 25 °C (relative to output area), (+/-)	0.5 %	0.5 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency		
• Common mode interference, min.	120 dB	120 dB
Interrupts/diagnostics/status information		
Alarms		
• Alarms	Yes	Yes
• Diagnostic alarm	Yes	Yes
Diagnostic messages		
• Diagnostic functions	Yes; Can be read out	Yes; Can be read out
• Monitoring the supply voltage	Yes	Yes
• Wire break	Yes	Yes
Diagnostics indication LED		
• for status of the inputs	Yes	Yes
• for maintenance	Yes	Yes
Degree and class of protection		
IP20	Yes	Yes
Standards, approvals, certificates		
CE mark	Yes	Yes
RCM (former C-TICK)	Yes	Yes
FM approval	Yes	Yes
Highest safety class achievable in safety mode		
• acc. to IEC 61508	none	none

Technical specifications (continued)

	6ES7231-5QD32-0XB0 SM 1231 TC 4x16 bit	6ES7231-5QF32-0XB0 SM 1231 TC 8x16bit
Climatic and mechanical conditions for storage and transport		
Climatic conditions for storage and transport		
• Free fall		
- Drop height, max . (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
• Temperature		
- Permissible temperature range	-40 °C to +70 °C	-40 °C to +70 °C
• Air pressure acc. to IEC 60068-2-13		
- Permissible air 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 in operation		
• Air pressure acc. to IEC 60068-2-13		
- Permissible air pressure	1080 to 795 hPa	1080 to 795 hPa
• Pollutant concentrations		
- SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free
Connection method		
required front connector	Yes	Yes
Mechanics/material		
Type of housing (front)		
• Plastic	Yes	Yes
Dimensions		
Width	45 mm	45 mm
Height	100 mm	100 mm
Depth	75 mm	75 mm
Weights		
Weight, approx.	180 g	220 g

Ordering data

	Article No.
SM 1231 thermocouple module	
4 inputs +/- 80 mV, resolution 15 bits + sign, thermocouple types J, K, S, T, R, E, N	**6ES7231-5QD32-0XB0**
8 inputs +/- 80 mV, resolution 15 bits + sign, thermocouple types J, K, T, E, R, S, N, C, TXK/XK(L)	**6ES7231-5QF32-0XB0**
Accessories	
Front flap set (spare part)	
For 8/16-channel signal modules	**6ES7291-1BA30-0XA0**
S7-1200 automation system, System Manual	
For SIMATIC S7-1200 and STEP 7 Basic	
German	**6ES7298-8FA30-8AH0**
English	**6ES7298-8FA30-8BH0**
French	**6ES7298-8FA30-8CH0**
Spanish	**6ES7298-8FA30-8DH0**
Italian	**6ES7298-8FA30-8EH0**
Chinese	**6ES7298-8FA30-8KH0**
S7-1200 automation system, Easy Book	
Brief instructions	
German	**6ES7298-8FA30-8AQ0**
English	**6ES7298-8FA30-8BQ0**
French	**6ES7298-8FA30-8CQ0**
Spanish	**6ES7298-8FA30-8DQ0**
Italian	**6ES7298-8EQ0**
Chinese	**6ES7298-8KQ0**

Overview

- For the convenient recording of temperatures with great accuracy
- 4 inputs
- Most popular resistance temperature detectors can be used
- Can easily be retrofitted to existing installation

Technical specifications

	6ES7231-5PD32-0XB0 SM 1231 RTD 4x16bit	**6ES7231-5PF32-0XB0** SM 1231 RTD 8x16bit
Supply voltage		
24 V DC	Yes	Yes
Input current		
Current consumption, typ.	40 mA	40 mA
from backplane bus 5 V DC, typ.	80 mA	80 mA
Power losses		
Power loss, typ.	1.5 W	1.5 W
Analog inputs		
Number of analog inputs	4; Resistance thermometer	8; Resistance thermometer
permissible input frequency for current input (destruction limit), max.	± 35 V	± 35 V
Technical unit for temperature measurement adjustable	Degrees Celsius/degrees Fahrenheit	Degrees Celsius/degrees Fahrenheit
Input ranges		
• Resistance thermometer	Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000	Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000
• Resistance	Yes; 150 Ω, 300 Ω, 600 Ω	Yes; 150 Ω, 300 Ω, 600 Ω
Input ranges (rated values), resistance thermometers		
• Cu 10	Yes	Yes
• Input resistance (Cu 10)	10 Ω	10 Ω
• Ni 100	Yes	Yes
• Input resistance (Ni 100)	100 Ω	100 Ω
• Ni 1000	Yes	Yes
• Input resistance (Ni 1000)	1 000 Ω	1 000 Ω
• LG-Ni 1000	Yes	Yes
• Input resistance (LG-Ni 1000)	1 000 Ω	1 000 Ω
• Ni 120	Yes	Yes
• Input resistance (Ni 120)	120 Ω	120 Ω
• Ni 200	Yes	Yes
• Input resistance (Ni 200)	200 Ω	200 Ω
• Ni 500	Yes	Yes
• Input resistance (Ni 500)	500 Ω	500 Ω
• Pt 100	Yes	Yes
• Input resistance (Pt 100)	100 Ω	100 Ω
• Pt 1000	Yes	Yes
• Input resistance (Pt 1000)	1 000 Ω	1 000 Ω
• Pt 200	Yes	Yes
• Input resistance (Pt 200)	200 Ω	200 Ω
• Pt 500	Yes	Yes
• Input resistance (Pt 500)	500 Ω	500 Ω
Input ranges (rated values), resistors		
• 0 to 150 ohms	Yes	Yes
• 0 to 300 ohms	Yes	Yes
• 0 to 600 ohms	Yes	Yes
Thermocouple (TC)		
• Temperature compensation		
- Parameterizable	No	No

Technical specifications (continued)

	6ES7231-5PD32-0XB0 SM 1231 RTD 4x16bit	6ES7231-5PF32-0XB0 SM 1231 RTD 8x16bit
Analog outputs		
Number of analog outputs	0	0
Analog value creation		
Measurement principle	integrating	integrating
Integrations and conversion time/resolution per channel		
• Resolution with overrange (bit including sign), max.	15 bit; + sign	15 bit; + sign
• Integration time, parameterizable	No	No
• Interference voltage suppression for interference frequency f1 in Hz	85 dB at 50 / 60 / 400 Hz	85 dB at 50 / 60 / 400 Hz
Errors/accuracies		
Repeat accuracy in steady state at 25 °C (relative to output area), (+/-)	0.05 %	0.05 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency		
• Common mode interference, min.	120 dB	120 dB
Interrupts/diagnostics/status information		
Alarms		
• Alarms	Yes	Yes
• Diagnostic alarm	Yes	Yes
Diagnostic messages		
• Diagnostic functions	Yes; Can be read out	Yes; Can be read out
• Monitoring the supply voltage	Yes	Yes
• Wire break	Yes	Yes
Diagnostics indication LED		
• for status of the inputs	Yes	Yes
• for maintenance	Yes	Yes
Degree and class of protection		
IP20	Yes	Yes
Standards, approvals, certificates		
CE mark	Yes	Yes
RCM (former C-TICK)	Yes	Yes
FM approval	Yes	Yes
Highest safety class achievable in safety mode		
• acc. to IEC 61508	none	none
Climatic and mechanical conditions for storage and transport		
Climatic conditions for storage and transport		
• Free fall		
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
• Temperature		
- Permissible temperature range	-40 °C to +70 °C	-40 °C to +70 °C
• Air pressure acc. to IEC 60068-2-13		
- Permissible air 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 in operation		
• Air pressure acc. to IEC 60068-2-13		
- Permissible air pressure	1080 to 795 hPa	1080 to 795 hPa
• Pollutant concentrations		
- SO2 at RH < 60% without condensation	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free	S02: < 0.5 ppm; H2S: < 0.1 ppm; RH < 60% condensation-free

Technical specifications (continued)

	6ES7231-5PD32-0XB0 SM 1231 RTD 4x16bit	6ES7231-5PF32-0XB0 SM 1231 RTD 8x16bit
Connection method		
required front connector	Yes	Yes
Mechanics/material		
Type of housing (front)		
• Plastic	Yes	Yes
Dimensions		
Width	45 mm	70 mm
Height	100 mm	100 mm
Depth	75 mm	75 mm
Weights		
Weight, approx.	220 g	220 g

Ordering data

	Article No.
SM 1231 RTD signal module	
4 inputs for resistance temperature detectors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 Ohm, resolution 15 bits + sign	**6ES7231-5PD32-0XB0**
8 inputs for resistance temperature detectors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 Ohm, resolution 15 bits + sign	**6ES7231-5PF32-0XB0**
Accessories	
Front flap set (spare part)	
For 8/16-channel signal modules	**6ES7291-1BA30-0XA0**

	Article No.
S7-1200 automation system, System Manual	
For SIMATIC S7-1200 and STEP 7 Basic	
German	**6ES7298-8FA30-8AH0**
English	**6ES7298-8FA30-8BH0**
French	**6ES7298-8FA30-8CH0**
Spanish	**6ES7298-8FA30-8DH0**
Italian	**6ES7298-8FA30-8EH0**
Chinese	**6ES7298-8FA30-8KH0**
S7-1200 automation system, Easy Book	
Brief instructions	
German	**6ES7298-8FA30-8AQ0**
English	**6ES7298-8FA30-8BQ0**
French	**6ES7298-8FA30-8CQ0**
Spanish	**6ES7298-8FA30-8DQ0**
Italian	**6ES7298-8FA30-8EQ0**
Chinese	**6ES7298-8FA30-8KQ0**

SIPLUS SM 1231 analog input modules

Overview

- Analog inputs for SIPLUS S7-1200
- With extremely short conversion times
- For connecting analog actuators and sensors without additional amplifiers
- Even solves more complex automation tasks
- From +60°C to +70°C, max. 50% of the inputs can be controlled simultaneously

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table.

	6AG1231-4HD32-4XB0 SM 1231 AI 4x13 bit
Based on	**6ES7231-4HD32-0XB0**
Ambient conditions	
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
• Resistance	
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!
Climatic and mechanical conditions for storage and transport	
Climatic conditions for storage and transport	
• Free fall	
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
• Temperature	
- Permissible temperature range	-40 °C to +70 °C
Mechanical and climatic conditions during operation	
Climatic conditions in operation	
• Temperature	
- Min.	-20 °C; = Tmin; startup @ 0 °C
- max.	60 °C; = Tmax

Ordering data

	Article No.
SIPLUS SM 1231 analog input signal module	
(extended temperature range and medial exposure)	
Ambient temperature range 0 ... +55 °C	
4 analog inputs ±10 V, ±5 V, ±2.5 V, or 0 ... 20 mA; 12 bits + sign	**6AG1231-4HD32-4XB0**
Accessories	See SIMATIC S7-1200 SM 1231 analog input, catalog ST 70 · 2013, page 3/74

Overview

- Analog outputs for SIPLUS S7-1200
- With extremely short conversion times
- For connecting analog actuators without additional amplifiers
- Even solves more complex automation tasks
- From +60 °C to +70 °C, max. 50% of the outputs can be controlled simultaneously

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table.

	6AG1232-4HB32-4XB0 SM 1232 AQ 2x14 bit
Based on	**6ES7232-4HB32-0XB0**
Ambient conditions	
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
• Resistance	
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!
Climatic and mechanical conditions for storage and transport	
Climatic conditions for storage and transport	
• Free fall	
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
• Temperature	
- Permissible temperature range	-40 °C to +70 °C
Mechanical and climatic conditions during operation	
Climatic conditions in operation	
• Temperature	
- Min.	-20 °C; = Tmin; startup @ 0 °C
- max.	60 °C; = Tmax

Ordering data

	Article No.
SIPLUS SM 1232 analog output signal modules	
(extended temperature range and medial exposure)	
Ambient temperature range 0 ... +55 °C	
2 analog outputs, ± 10 V with 14 bits or 0 ... 20 mA with 13 bits	**6AG1232-4HB32-4XB0**
Accessories	See SIMATIC S7-1200 SM 1232 analog output, catalog ST 70 · 2013, page 3/79

SIPLUS SM 1234 analog input/output modules

Overview

- Analog inputs and outputs for SIPLUS S7-1200
- With extremely short conversion times
- For connecting analog actuators and sensors without additional amplifiers
- Even solves more complex automation tasks
- From +60 °C to +70 °C, max. 50% of the inputs and outputs can be controlled simultaneously

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table.

	6AG1234-4HE32-2XB0 SM 1234 A I4x13 bit AQ 2x14 bit	**6AG1234-4HE32-4XB0** SM 1234 A I4x13 bit AQ 2x14 bit
Based on	**6ES7234-4HE32-0XB0**	**6ES7234-4HE32-0XB0**
Ambient conditions		
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	
• Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	
• Resistance		
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

	6AG1234-4HE32-2XB0 SM 1234 A I4x13 bit AQ 2x14 bit	**6AG1234-4HE32-4XB0** SM 1234 A I4x13 bit AQ 2x14 bit
Based on	**6ES7234-4HE32-0XB0**	**6ES7234-4HE32-0XB0**
Climatic and mechanical conditions for storage and transport		
Climatic conditions for storage and transport		
• Free fall		
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	
• Temperature		
- Permissible temperature range	-40 °C to +70 °C	
Mechanical and climatic conditions during operation		
Climatic conditions in operation		
• Temperature		
- Min.	-40 °C; = Tmin; startup @ -25 °C	-20 °C; = Tmin; startup @ 0 °C
- max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously used outputs 1, inputs 2 (no adjacent points) for horizontal mounting position	60 °C; = Tmax

Ordering data

	Article No.
SIPLUS SM 1234 analog input/output signal modules	
(extended temperature range and medial exposure)	
Ambient temperature range -25 ... +70 °C, from +60 … +70 °C number of simultaneously controllable inputs and outputs max. 50%	
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	**6AG1234-4HE32-2XB0**
Ambient temperature range 0 ... +55 °C	
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	**6AG1234-4HE32-4XB0**
Accessories	See SIMATIC S7-1200 SM 1234 analog input/output, catalog ST 70 · 2013, page 3/84

Overview

- For the convenient recording of temperatures with great accuracy
- 7 common thermocouple types can be used
- Also for the measurement of analog signals with a low level (±80 mV)
- Can easily be retrofitted to existing plant

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table.

	6AG1231-5QD...	**6AG1231-5QF...**
	SM 1231 TC 4x16 bit	SM 1231 TC 8x16bit
Based on	**6ES7231-5QD32-0XB0**	**6ES7231-5QF32-0XB0**
Ambient conditions		
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	
• Relative humidity		
- with condensation, maximum	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)	
• Resistance		
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	
Climatic and mechanical conditions for storage and transport		
Climatic conditions for storage and transport		
• Free fall		
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	
• Temperature		
- Permissible temperature range	-40 °C to +70 °C	
Mechanical and climatic conditions during operation		
Climatic conditions in operation		
• Temperature		
- Min.	0 °C; = Tmin	
- max.	55 °C; = Tmax	

Ordering data

	Article No.
SM 1231 thermocouple module	
(Extended temperature range and medial exposure)	
Ambient temperature range -40 ... +70 °C	
8 inputs +/- 80 mV, resolution 15 bits + sign, thermocouple types J, K, T, E, R, S, N, C, TXK/XK(L); replaces 6AG1231-5QF30-4XB0	On request
4 inputs +/- 80 mV, resolution 15 bits + sign, thermocouple types J, K, T, E, R, S, N, C, TXK/XK(L); replaces 6AG1231-5QD30-4XB0	On request
Accessories	See SIMATIC S7-1200 SM 1231 thermocouple module, catalog ST 70 · 2013, page 3/87

SIPLUS SM 1231 RTD signal modules

Overview

- For the convenient recording of temperatures with great accuracy
- 4 inputs
- Most popular resistance temperature detectors can be used
- Can easily be retrofitted to existing plant

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table.

	6AG1231-5PD...	**6AG1231-5PF...**
	SM 1231 RTD 4x16bit	SM 1231 RTD 8x16bit
Based on	**6ES7231-5PD32-0XB0**	**6ES7231-5PF32-0XB0**
Ambient conditions		
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	
• Relative humidity		
- with condensation, maximum	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)	
• Resistance		
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray. The supplied connector covers must remain on the unused interfaces during operation!	
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	
Climatic and mechanical conditions for storage and transport		
Climatic conditions for storage and transport		
• Free fall		
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	
• Temperature		
- Permissible temperature range	-40 °C to +70 °C	
Mechanical and climatic conditions during operation		
Climatic conditions in operation		
• Temperature		
- Min.	-25 °C; = Tmin	
- max.	70 °C; = Tmax	

Ordering data

	Article No.
SIPLUS SM 1231 RTD signal module	
(extended temperature range and medial exposure)	
4 inputs for resistance temperature detectors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 Ohm, resolution 15 bits + sign; replaces 6AG1231-5PD30-2XB0	On request
8 inputs for resistance temperature detectors Pt10/50/100/200/500/1000, Ni100/120/200/500/1000, Cu10/50/100, LG-Ni1000; resistance 150/300/600 Ohm, resolution 15 bits + sign; replaces 6AG1231-5PF30-2XB0	On request
Accessories	See SIMATIC S7-1200 SM 1231 RTD signal module, catalog ST 70 · 2013, page 3/92

Overview

- Module for connecting up to 4 IO-Link devices in accordance with IO Link specification V1.1. The IO-Link parameters are configured using the Port Configuration Tool (PCT), version V3.2 and higher.

Technical specifications

	6ES7278-4BD32-0XB0 SM 1278, IO-Link Master
Supply voltage	
24 V DC	Yes
permissible range, upper limit (DC)	28.8 V
Power losses	
Power loss, typ.	1 W
Interrupts/diagnostics/status information	
Diagnostic messages	
• Diagnostic functions	Yes
Degree and class of protection	
IP20	Yes
Standards, approvals, certificates	
RCM (former C-TICK)	Yes
FM approval	Yes
Climatic and mechanical conditions for storage and transport	
Climatic conditions for storage and transport	
• Free fall	
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package
• Temperature	
- Permissible temperature range	-40 °C to +70 °C
• Air pressure acc. to IEC 60068-2-13	
- Permissible air pressure	1080 to 660 hPa
• Relative humidity	
- Permissible range (without condensation) at 25 °C	95 %
Mechanical and climatic conditions during operation	
Climatic conditions in operation	
• Temperature	
- Permissible temperature change	5°C to 55°C, 3°C / minute
Mechanics/material	
Type of housing (front)	
• Plastic	Yes
Dimensions	
Width	45 mm
Height	100 mm
Depth	75 mm
Weights	
Weight, approx.	150 g

Ordering data

	Article No.
SM 1278 signal module 4xIO-Link master For the connection of up to 4 IO-Link devices according to IO Link Specification V1.1	**6ES7278-4BD32-0XB0**

3

SIWAREX WP231

Overview

SIWAREX WP231 is a versatile weighing module for all simple weighing and force measuring tasks. The compact module is easy to install in the SIMATIC S7-1200 automation system. It can also be operated without a SIMATIC CPU.

Technical specifications

SIWAREX WP231	
Integration in automation systems	
S7-1200	Directly via SIMATIC bus
• Operator panel • Automation systems from other manufacturers (possible with limitations)	Via Ethernet (Modbus TCP/IP) or RS 485 (Modbus RTU)
Communication interfaces	• SIMATIC S7-1200 backplane bus • RS 485 • Ethernet
Connection of remote displays (via RS 485)	Display for weight value
Adjustment of scale settings	PC configuration software SIWATOOL (Ethernet) or directly connected operator panel (Modbus)
Measuring accuracy	
Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)	0.05 %
Internal resolution	up to 4 million parts
Number of measurements/second	100
Filters	• Low-pass filter 0.1 ... 50 Hz • Mean value filter
Weighing functions	
Weight values	• Gross • Net • Tare
Limits	• Min/max • Empty
Zeroing function	Per command
Tare function	Per command
Tare specification	Per command

SIWAREX WP231	
Load cells	Strain gauges in 4-wire or 6-wire system
Load cell excitation	
Supply voltage (regulated via feedback)	4.85 V DC
Permissible load resistance	
• R_{Lmin}	> 40 Ω
• R_{Lmax}	< 4 100 Ω
With SIWAREX IS Ex interface	
• R_{Lmin}	> 50 Ω
• R_{Lmax}	< 4 100 Ω
Load cell characteristic	1 … 4 mV/V
Permissible range of the measurement signal (with 4 mV/V sensors)	-21.3 ... +21.3 mV
Max. distance of load cells	500 m (229.66 ft)
Connection to load cells in Ex zone 1	Optionally via SIWAREX IS Ex interface
Ex approvals	• ATEX Zone 2 • UL • FM available soon
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	200 mA
Max. power consumption SIMATIC Bus	3 mA
IP degree of protection to DIN EN 60529; IEC 60529	IP20
Climatic requirements $T_{min\ (IND)}$ ... $T_{max\ (IND)}$ (operating temperature)	
Vertical installation	-10 ... +55 °C (14 ... 131 °F)
Horizontal installation	-10 ... +40 °C (14 ... 104 °F)
EMC requirements according to	EN 45501
Dimensions	70 x 75 x 100 mm (2.76 x 2.95 x 3.94 inches)

Ordering data

	Article No.
SIWAREX WP231 Weighing electronics for scales in SIMATIC S7-1200	**7MH4960-2AA01**
SIWAREX S7-1200 device manual Available in a range of languages Free download on the Internet at: http://www.siemens.com/weighing-technology	
SIWAREX WP231 "Ready for Use" Complete software package for non-automatic scale (for S7-1200 and a directly connected operator panel) Free download from Internet at: http://www.siemens.com/weighing-technology	

Ordering data

	Article No.
Configuration package SIWAREX WP231 on CD-ROM for TIA Portal V11 • "Ready for use" software for operating a scale with SIWAREX WP231 and a touch panel (in a variety of languages) • SIWATOOL V7.0 calibration tool • Device manuals (PDF files in a variety of languages)	**7MH4960-2AK01**
Ethernet cable patch cord 2 m (7 ft) For connecting SIWAREX WP231 to a PC (SIWATOOL), SIMATIC CPU, panel, etc.	**6XV1850-2GH20**
Remote display (optional) The digital remote displays can be connected directly to the SIWAREX WP231 via the RS 485 interface. Suitable remote display: S102 *Siebert Industrieelektronik GmbH* *P.O. Box 1180* *D-66565 Eppelborn, Germany* *Tel.: +49 6806/980-0* *Fax: +49 6806/980-999* Internet: http://www.siebert.de Detailed information is available from manufacturer.	

	Article No.
Accessories	
SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting several junction boxes	**7MH4710-1BA**
SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel	**7MH4710-1EA**
Ex interface, type SIWAREX IS With ATEX approval, but **without UL and FM approvals**, for intrinsically-safe connection of load cells, including device manual Suitable for the SIWAREX U, CS, MS, FTA, FTC, M, CF and WP231 weighing modules Approved for use in the EU	
• Short-circuit current < 199 mA DC	**7MH4710-5BA**
• Short-circuit current < 137 mA DC	**7MH4710-5CA**
Cable (optional)	
Cables Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, orange sheath To connect SIWAREX U, CS, MS, FTA, FTC, M, CF, WP231, WP241 and WP321 to the junction box (JB), extension box (EB) and Ex interface (Ex I) or between two JBs, for fixed laying, occasional bending permitted, approx. 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-104 ... +176 °F)	**7MH4702-8AG**
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, blue sheath To connect SIWAREX U, CS, MS, FTA, FTC, M, CF, WP231, WP241 and WP321 to the junction box (JB), extension box (EB) and Ex interface (Ex I) or between two JBs, for fixed laying, occasional bending permitted, approx. 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-104 ... +176 °F)	**7MH4702-8AF**
DIN rail ground terminals for load cell cables Terminals for connecting the load cell cable shield to the grounded DIN rail	**6ES5728-8MA11**

CM 1241 communication modules

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

Technical specifications

	6ES7241-1CH32-0XB0 CM 1241 RS422/485	6ES7241-1AH32-0XB0 CM 1241 RS232
Supply voltage		
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
Input current		
Current consumption, max.		220 mA; From L5+; logic
Power losses		
Power loss, typ.	1.2 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
• 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		
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package	0.3 m; five times, in dispatch package
• Temperature		
- Permissible temperature range	-40 °C to +70 °C	-40 °C to +70 °C
• Air pressure acc. to IEC 60068-2-13		
- Permissible air 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 in operation		
• Temperature		
- Permissible temperature change	5°C to 55°C, 3°C / minute	5°C to 55°C, 3°C / minute
• Air pressure acc. to IEC 60068-2-13		
- Permissible air pressure	1080 to 795 hPa	1080 to 795 hPa
Software		
Runtime software		
• Target system		
- S7-1200	Yes	Yes
Dimensions		
Width	30 mm	30 mm
Height	100 mm	100 mm
Depth	75 mm	75 mm
Weights		
Weight, approx.	155 g	150 g

Ordering data

	Article No.
CM 1241 communication module	
Communication module for point-to-point connection, with one RS422/485 interface	**6ES7241-1CH32-0XB0**
Communication module for point-to-point connection, with one RS232 interface	**6ES7241-1AH32-0XB0**

	Article No.
Accessories	
Front flap set (spare part)	
For communication modules	**6ES7291-1CC30-0XA0**
S7-1200 automation system, System Manual	
For SIMATIC S7-1200 and STEP 7 Basic	
German	**6ES7298-8FA30-8AH0**
English	**6ES7298-8FA30-8BH0**
French	**6ES7298-8FA30-8CH0**
Spanish	**6ES7298-8FA30-8DH0**
Italian	**6ES7298-8FA30-8EH0**
Chinese	**6ES7298-8FA30-8KH0**
S7-1200 automation system, Easy Book	
Brief instructions	
German	**6ES7298-8FA30-8AQ0**
English	**6ES7298-8FA30-8BQ0**
French	**6ES7298-8FA30-8CQ0**
Spanish	**6ES7298-8FA30-8DQ0**
Italian	**6ES7298-8FA30-8EQ0**
Chinese	**6ES7298-8FA30-8KQ0**

SIPLUS CM 1241 communication modules

Overview

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

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table.

	6AG1241-1AH32-2XB0 CM 1241 RS232	**6AG1241-1AH30-4XB0** CM 1241 RS232	**6AG1241-1CH31-2XB0** CM 1241 RS422/485	**6AG1241-1CH31-4XB0** CM 1241 RS422/485
Based on	**6ES7241-1AH32-0XB0**	**6ES7241-1AH30-0XB0**	**6ES7241-1CH31-0XB0**	**6ES7241-1CH31-0XB0**
Ambient conditions				
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
• at cold restart, minimum	-25 °C			
• Relative humidity				
- with condensation, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
• Resistance				
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			
Climatic and mechanical conditions for storage and transport				
Climatic conditions for storage and transport				
• Free fall				
- Drop height, max. (in packaging)	0.3 m; five times, in dispatch package			
• Temperature				
- Permissible temperature range	-40 °C to +70 °C			

Technical specifications (continued)

	6AG1241-1AH32-2XB0 CM 1241 RS232	6AG1241-1AH30-4XB0 CM 1241 RS232	6AG1241-1CH31-2XB0 CM 1241 RS422/485	6AG1241-1CH31-4XB0 CM 1241 RS422/485
Based on	**6ES7241-1AH32-0XB0**	**6ES7241-1AH30-0XB0**	**6ES7241-1CH31-0XB0**	**6ES7241-1CH31-0XB0**
Mechanical and climatic conditions during operation				
Climatic conditions in operation				
• Temperature				
- Min.	-40 °C; = Tmin; startup @ -25 °C	0 °C; = Tmin	-25 °C	0 °C; = Tmin
- max.	70 °C; = Tmax	55 °C; = Tmax	70 °C; Tmax > 55 °C derating: Max. one module may be configured; this module must be the last module on the CM bus; minimum clearance on the left side of at least 45 mm	55 °C; = Tmax
- Permissible temperature change		5°C to 55°C, 3°C / minute		5°C to 55°C, 3°C / minute

Ordering data

	Article No.
SIPLUS CM 1241 communication module	
(Extended temperature range and medial exposure)	
Ambient temperature -25 ... +70° C	
Communication module for point-to-point connection, with one RS485 interface	**6AG1241-1CH31-2XB0**
Communication module for point-to-point connection, with one RS232 interface	**6AG1241-1AH32-2XB0**
Suitable for areas with extraordinary medial exposure (conformal coating)	
Communication module for point-to-point connection, with one RS485 interface	**6AG1241-1CH31-4XB0**
Communication module for point-to-point connection, with one RS232 interface	**6AG1241-1AH30-4XB0**

	Article No.
Accessories	See SIMATIC S7-1200 CM 1241 communication module, catalog ST 70 N· 2014, page 3/41

SIPLUS CB 1241 RS485 communication board

Overview

- For fast, high-performance serial data exchange via point-to-point connection
- Implemented protocols: ASCII, USS drive protocol, Modbus RTU
- Additional protocols can be loaded later
- Simple parameterization with STEP 7 Basic
- Can be plugged directly into the CPU

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

	Article No.
SIPLUS CB 1241 RS485 communication board for point-to-point connection, with 1 RS485 interface	**6AG1241-1CH30-5XB1**
Accessories	See SIMATIC CB 1241 RS485 communication board, catalog ST 70 · 2013, S. 3/107

Overview

- Unmanaged switch for connection of SIPLUS S7-1200 to an Industrial Ethernet network with a line, tree or star topology
- Multiplication of Ethernet interfaces on a SIPLUS S7-1200 for additional connection of up to three programming devices, operator controls, and further Ethernet nodes
- Simple, space-saving mounting on the SIPLUS S7-1200 rail
- Low-cost solution for implementing small, local Ethernet networks
- Problem-free connection using RJ45 standard connectors
- Simple and fast status display via LEDs on the device
- Integral autocrossover function permits use of uncrossed connecting cables

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS NET CSM 1277	
Article number	**6AG1277-1AA10-4AA0**
Article number based on	**6GK7277-1AA10-0AA0**
Ambient temperature range	0 … +60 °C

Technical specifications

Article No.	**6AG1277-1AA10-4AA0**
Product-type designation	SIPLUS CSM 1277
Based on	**6GK7277-1AA10-0AA0**
Permitted ambient conditions	
Ambient temperature	
• during operating	0 °C 60 °C
• during storage	-40 °C 70 °C
• during transport	-40 °C 70 °C
Resistance to biologically active substances conformity in accordance with EN 60721-3-3	Compliant with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna); the supplied plug covers must remain in place on the unused interfaces during operation.
Resistance to chemically active substances conformity in accordance with EN 60721-3-3	Compliant with EN 60721-3-3, Class 3C4 incl. salt spray in accordance with EN 60068-2-52 (severity 3); the supplied plug covers must remain in place on the unused interfaces during operation.
Resistance to mechanically active substances conformity in accordance with EN 60721-3-3 note	Compliant with EN 60721-3-3, Class 3S4 incl. sand, dust; the supplied plug covers must remain in place on the unused interfaces during operation.

Ordering data

	Article No.
SIPLUS NET CSM 1277 compact switch module (extended temperature range and medial exposure) Unmanaged switch for connection of SIPLUS 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, LED diagnostics, S7-1200 module including electronic Manual on CD-ROM	**6AG1277-1AA10-4AA0**
Accessories	See CSM 1277 unmanaged, catalog ST 70 · 2013, page 3/114

SIMATIC HMI Basic Panels (2nd Generation)

Overview

KTP Basic Panel family 2nd generation

With their fully developed HMI basic functions, 2nd generation SIMATIC HMI Basic Panels are the ideal entry level series for simple HMI applications.

The device family offers panels with 4", 7", 9" and 12" widescreen displays, as well as combined key and touch operation.

The innovative high-resolution widescreen displays with 64 000 colors are also suitable for upright installation, and they can be dimmed down to 100 %. The innovative operator interface with improved usability opens up a diverse range of options thanks to new controls and graphics. The new USB interface enables the connection of keyboard, mouse or barcode scanner, and supports the simple archiving of data on a USB stick.

The integrated Ethernet or RS 485/422 interface (PROFIBUS devices planned) enables simple connection to the controller.

Technical specifications

SIMATIC HMI KTP400 Basic / KTP700 Basic / KTP900 Basic

Technical specifications	KTP400 Basic	KTP700 Basic	KTP900 Basic
Display	4.3" TFT LCD, 64K colors	7" TFT LCD, 64K colors	9" TFT LCD, 64K colors
Resolution (W x H in pixels)	482 x 272	800 x 480	
MTBF [1] Backlight (at 25°C)	approx. 20 000 h [2]		
Type of operation	Touch screen		
Operator controls	Keys and touch		
Function keys, programmable / system keys	4 / 0	8 / 0	
Alpha / numeric input	Yes/Yes		
Memory			
Usable memory for application data	10 MB Flash		
Memory for options / recipes	- / 256 KB integrated Flash		
Interfaces	1 x Ethernet (RJ45), 1 x USB	1 x Ethernet (RJ45), 1 x USB or 1 x RS 422 / RS 485, 1 x USB	1 x Ethernet (RJ45), 1 x USB
Connection to PLC	SIMATIC: S7-1200, S7-1500, S7-200, S7-300, S7-400; ET200S CPU, LOGO! for PROFIBUS devices (DP): Allen Bradley (DF1), Modicon MODBUS serial, Mitsubishi FX (serial), Omron Hostlink/Multilink For PROFINET Devices (PN): Modicon MODBUS TCP/IP, Allen-Bradley Ethernet IP, Mitsubishi (MC TCP/IP)		
Supply voltage	24 V DC		
Clock	Real-time clock, with backup (min. 6 weeks), can be synchronized		
Degree of protection			
Front / rear	IP65, enclosure Type 4x/Type 12 (indoor use only) / IP20		
Certification	CE, cULus, C-Tick		
Functionality with WinCC flexible / WinCC (TIA Portal)			
Alarm logging			
Number of alarms	1 000		
Number of alarm classes	32		
Discrete / analog alarms	Yes/Yes		
Alarm buffer	Ring buffer, 256 entries, non-volatile		
Tags	800		
Recipes	50		
Graphics objects	Bitmaps, icons, full-screen icon, vector graphics		

[1] MTBF: Operating hours after which the maximum screen brightness is reduced by half compared to the original value.

[2] The MTBF is increased by using the built-in dimming function

Technical specifications (continued)

Technical specifications	KTP400 Basic	KTP700 Basic	KTP900 Basic
Dynamic objects	Charts, bar graphs, trends		
Libraries	Yes		
Text lists / graphics lists	Yes/Yes		
Logging			
Number of logs per project	2		
Number of entries per log	10 000		
Log types	Ring, sequential, alarm, process value		
Memory location	USB memory stick		
Data storage format	TXT file		
External analysis	Readable, e.g. with MS Excel, MS Access, etc.		
Log size	Depending on the available space on the external stick.		
Online analysis	-		
User administration (security)			
Number of user groups / number of user rights	50 / 32		
Languages			
Online languages	10		
Project languages (including system alarms)	Chinese (simplified), Chinese (traditional), Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Turkish		
Character set	Tahoma, WinCC Standard, Symbol languages		
Configuration tool			
Transfer (upload / download)	PROFINET; MPI/PROFIBUS DP; automatic transfer detection		
Dimensions			
Enclosure front (W x H) in mm	141 x 116	214 x 158	267 x 182
Mounting cutout in mm	123 x 99	197 x 141	251 x 166

1) MTBF: Operating hours after which the maximum screen brightness is reduced by half compared to the original value.

2) The MTBF is increased by using the built-in dimming function

Ordering data

	Article No.
SIMATIC HMI Basic Panels, Key and Touch	
SIMATIC HMI KTP400 Basic	**6AV2123-2DB03-0AX0**
SIMATIC HMI KTP700 Basic	**6AV2123-2GB03-0AX0**
SIMATIC HMI KTP900 Basic	**6AV2123-2JB03-0AX0**
Starter kits	
Starter kit SIMATIC S7-1200 + KP300 Basic mono PN	**6AV6651-7HA01-3AA4**
Starter Kit SIMATIC S7-1200 + KTP400 Basic	**6AV6651-7KA01-3AA4**
Starter Kit SIMATIC S7-1200 + KTP700 Basic Starter kits with an S7-1200 consist of: • the respective SIMATIC HMI Basic Panel SIMATIC HMI KP300 Basic mono PN SIMATIC HMI KTP400 Basic SIMATIC HMI KTP700 Basic • SIMATIC S7-1200 CPU 1212C AC/DC/Rly • SIMATIC S7-1200 Simulator Module SIM 12 • SIMATIC STEP 7 BASIC CD • SIMATIC S7-1200 HMI Manual Collection CD • Ethernet CAT5 cable, 2 m	**6AV6651-7DA01-3AA4**

	Article No.
LOGO! starter kit + KP300 Basic mono PN	**6AV2132-0HA00-0AA1**
LOGO! starter kit + KTP400 Basic Starter kits with a LOGO! consist of: • the respective SIMATIC HMI Basic Panel SIMATIC HMI KP300 Basic mono PN SIMATIC HMI KTP400 Basic • LOGO! 12/24 RCE • LOGO! POWER 24 V 1.3 A • LOGO! SOFT COMFORT V7 • WINCC BASIC (TIA Portal) • Ethernet CAT5 cable, 2 m	**6AV2132-0KA00-0AA1**
Documentation You can find the manual for the Basic Panels on the Internet at:	http://support.automation.siemens.com
Accessories	See catalog ST 80/ST PC, HMI accessories

SIMATIC S7-1200 CM CANopen

Note

The following catalog pages contain information on supplementary products that are manufactured and marketed, not by Siemens, but by third-parties outside the Siemens group ("external companies"). These external companies organize the manufacture, sale and delivery of their products independently. Their own terms and conditions of business and delivery apply.

Responsibility for these supplementary products and for the associated information presented here rests exclusively with the respective external company. Unless compulsory by law, Siemens assumes no liability and makes no guarantee for supplemental products of external companies. Please refer also to the note on "Exemption from liability/Use of hyperlinks" included with each product.

Overview

Note

The CM CANopen module is an HMS product and can only be obtained through HMS.

Overview

An interface module is available for operating the S7-1200 on CANopen. It can be used together with system and IO components of the S7-1200 automation system.

Application

CANopen is a widely used industrial bus system and can be used for a variety of different applications. The module allows simple and cost-effective connection of CANopen applications to SIMATIC.

- Control of hydraulic valves/axes in vehicles
- Control of motors in packaging machines or conveyors
- Capturing of angular encoder positions in wind turbines
- Capturing of control devices on machines, e.g. joysticks
- Capturing the measured data of path encoders, inclinometers or angular encoders, e.g. for tower cranes and gantry cranes

The CM CANopen module has the following properties:

- Interface module for CANopen (master/slave) for SIMATIC S7-1200
- Connection of up to 16 CANopen slave stations in the master mode
- 256 bytes of input data and 256 bytes of output data per module
- Connection of up to 3 modules per CPU
- 3 LEDs for module, network and I/O status diagnostics
- Possible integration of the module into the hardware catalog of the TIA Portal configuration suite
- Supports Transparent CAN 2.0A for processing customer-specific protocols
- CANopen implementation according to communication profiles CiA 301 Rev. 4.2 and CiA 302 Rev. 4.1 (Master)

More information

The CANopen bus can be configured via any commercially available CANopen configuration tool. The HMS company also supplies suitable "CM CANopen Configuration Studio" software with the product. The configuration is saved directly on the module by means of a USB connection. Routing via PROFIBUS/PROFINET is not possible.

Preprogrammed function blocks are available for easier PLC programming in the TIA Portal.

For further information, please contact HMS directly:

http://www.hms-networks.com/can-for-s7-1200

Ordering and Support

Please note that ordering and support for the module are exclusively carried out via HMS. Please contact HMS directly should you have any questions concerning this module. The relevant contact details can be found on the Internet at

http://www.hms-networks.com/can-for-s7-1200

Exemption from liability/Use of hyperlinks

Siemens has prepared this description with great care. It is not possible, however, for Siemens to verify that the data supplied by external companies is complete, correct or up to date. The possibility that individual items of information might be incorrect, incomplete, or not up-to-date cannot therefore be ruled out. Unless compulsory by law, Siemens accepts no liability for the usability of the data or of the product for the user per se.

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SIMATIC S7-1500

4

Brochures

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

www.siemens.com/simatic/printmaterial

Standard CPUs

Overview CPU 1515-2 PN

- The CPU for applications with medium to high requirements for program/data storage in the S7-1500 controller product range
- Medium to high processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- Integrated web server with the option of creating user-defined web pages
- SIMATIC memory card required for operation of the CPU

Overview CPU 1518-4 PN/DP

- The CPU with a very large program and data memory in the S7-1500 controller product range for demanding applications with extremely high requirements regarding program scope, performance and networking
- Extremely high processing speed for binary and floating-point arithmetic
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- Two additional PROFINET interfaces with separate IP address
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller.
- PROFIBUS DP master interface
- Isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- Integrated web server with the option of creating user-defined web pages
- SIMATIC memory card required for operation of the CPU

Technical specifications

	6ES7515-2AM00-0AB0 CPU 1515-2 PN	**6ES7518-4AP00-0AB0** CPU 1518-4 PN/DP
General information		
Engineering with		
• STEP 7 TIA Portal can be configured/integrated as of version	V13	V13
Display		
Screen diagonal (cm)	6.1 cm	6.1 cm
Supply voltage		
Type of supply voltage	24 V DC	24 V DC
Power losses		
Power loss, typ.	6.3 W	24 W
Memory		
Work memory		
• integrated (for program)	500 kbyte	3 Mbyte
• integrated (for data)	3 Mbyte	10 Mbyte
Load memory		
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte
CPU processing times		
for bit operations, typ.	30 ns	1 ns
for word operations, typ.	36 ns	2 ns
for fixed point arithmetic, typ.	48 ns	2 ns
for floating point arithmetic, typ.	192 ns	6 ns
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times		
• Number	2 048	2 048
IEC timer		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)

Technical specifications (continued)

	6ES7515-2AM00-0AB0 CPU 1515-2 PN	6ES7518-4AP00-0AB0 CPU 1518-4 PN/DP
Data areas and their retentivity		
Flag		
• Number, max.	16 kbyte	16 kbyte
Address area		
I/O address area		
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day		
Clock		
• Type	Hardware clock	Hardware clock
Interfaces		
1st interface		
• Interface types		
- Number of ports	2	2
- Integrated switch	Yes	Yes
- RJ 45 (Ethernet)	Yes	Yes
• Protocols		
- PROFINET IO Controller	Yes	Yes
- PROFINET IO Device	Yes	Yes
- SIMATIC communication	Yes	Yes
- Open IE communication	Yes	Yes
- Web server	Yes	Yes
- Media redundancy	Yes	Yes
2nd interface		
• Interface types		
- Number of ports	1	1
- Integrated switch	No	No
- RJ 45 (Ethernet)	Yes	Yes
• Protocols		
- PROFINET IO Controller	No	No
- PROFINET IO Device	No	No
- SIMATIC communication	Yes	Yes
- Open IE communication	Yes	Yes
- Web server	Yes	Yes
3rd interface		
• Interface types		
- Number of ports		1
- Integrated switch		No
- RJ 45 (Ethernet)		Yes
• Protocols		
- PROFINET IO Controller		No
- PROFINET IO Device		No
- SIMATIC communication		Yes
- Open IE communication		Yes
- Web server		Yes
4th interface		
• Interface types		
- Number of ports		1
- RS 485		Yes
• Protocols		
- SIMATIC communication		Yes
- PROFIBUS DP master		Yes
- PROFIBUS DP slave		No
Protocols		
Number of connections		
• Number of connections, max.	192	384
PROFINET IO Controller		
• Services		
- Max. number of connectable IO devices for RT	256	512
- Number of IO Devices with IRT and the option "high performance", max.	64	64
PROFIBUS		
• Services		
- Number of DP slaves		125

Technical specifications (continued)

	6ES7515-2AM00-0AB0 CPU 1515-2 PN	6ES7518-4AP00-0AB0 CPU 1518-4 PN/DP
Isochronous mode		
Isochronous operation (application synchronized up to terminal)	Yes	Yes
supported technology objects		
Motion	Yes	Yes
• Speed-controlled axis		
- Number of speed-controlled axes, max.	20; Up to 20 axes in total (speed-controlled, positioning axis, external encoders) are supported	128; Up to 128 axes in total (speed-controlled, positioning axis, external encoders) are supported
• Positioning axis		
- Number of positioning axes, max.	20; Up to 20 axes in total (speed-controlled, positioning axis, external encoders) are supported	128; Up to 128 axes in total (speed-controlled, positioning axis, external encoders) are supported
• External encoders		
- Number of external encoders, max.	20; Up to 20 axes in total (speed-controlled, positioning axis, external encoders) are supported	128; Up to 128 axes in total (speed-controlled, positioning axis, external encoders) are supported
Controller		
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
Counting and measuring		
• High-speed counter	Yes	Yes
Ambient conditions		
Operating temperature		
• horizontal installation, min.	0 °C	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	0 °C	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Configuration		
programming		
• Programming language		
- LAD	Yes	Yes
- FBD	Yes	Yes
- STL	Yes	Yes
- SCL	Yes	Yes
- GRAPH	Yes	Yes
Know-how protection		
• User program protection	Yes	Yes
• Copy protection	Yes	Yes
• Block protection	Yes	Yes
Access protection		
• Password for display	Yes	Yes
• Protection level: Write protection	Yes	Yes
• Protection level: Read/write protection	Yes	Yes
• Protection level: Complete protection	Yes	Yes
Dimensions		
Width	70 mm	175 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	830 g	1 988 g

Ordering data	Article No.
CPU 1515-2 PN	**6ES7515-2AM00-0AB0**
Work memory 500 KB for program, 3 MB for data, PROFINET IO IRT interface, PROFINET interface; SIMATIC memory card required	
CPU 1518-4 PN/DP	**6ES7518-4AP00-0AB0**
Work memory 3 MB for program, 10 MB for data, PROFINET IO IRT interface, 2 PROFINET/PROFIBUS interfaces; SIMATIC memory card required	
Accessories	
SIMATIC memory card	
4 MB	**6ES7954-8LC02-0AA0**
12 MB	**6ES7954-8LE02-0AA0**
24 MB	**6ES7954-8LF02-0AA0**
2 GB	**6ES7954-8LP01-0AA0**
SIMATIC S7-1500 mounting rail	
Fixed lengths, with grounding elements	
• 160 mm	**6ES7590-1AB60-0AA0**
• 482 mm	**6ES7590-1AE80-0AA0**
• 530 mm	**6ES7590-1AF30-0AA0**
• 830 mm	**6ES7590-1AJ30-0AA0**
For cutting to length by customer, without drill holes; grounding elements must be ordered separately	
• 2000 mm	**6ES7590-1BC00-0AA0**
PE connection element for mounting rail 2000 mm	**6ES7590-5AA00-0AA0**
20 units	
Power supply	
For supplying the backplane bus of the S7-1500	
24 V DC input voltage, power 25 W	**6ES7505-0KA00-0AB0**
24/48/60 V DC input voltage, power 60 W	**6ES7505-0RA00-0AB0**
120/230 V AC input voltage, power 60 W	**6ES7507-0RA00-0AB0**
Power connector	**6ES7590-8AA00-0AA0**
With coding element for power supply module; spare part, 10 units	
Load power supply	
24 V DC/3A	**6EP1332-4BA00**
24 V DC/8A	**6EP1333-4BA00**
Power supply connector	
Spare part; for connecting the 24 V DC supply voltage	
• with push-in terminals	**6ES7193-4JB00-0AA0**
PROFIBUS FastConnect bus connector RS485 with 90° cable outlet	
with insulation displacement, max. transmission rate 12 Mbit/s	
without PG interface, grounding via control cabinet contact surface; 1 unit	**6ES7972-0BA70-0XA0**
with PG interface, grounding via control cabinet contact surface; 1 unit	**6ES7972-0BB70-0XA0**

	Article No.
PROFIBUS FC Standard Cable GP	**6XV1830-0EH10**
Standard type with special design for fast mounting, 2-core, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FC Robust Cable	**6XV1830-0JH10**
2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FC Flexible Cable	**6XV1831-2K**
2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FC Trailing Cable	
2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
Sheath color: Petrol	**6XV1830-3EH10**
Sheath color: Violet	**6XV1831-2L**
PROFIBUS FC Food Cable	**6XV1830-0GH10**
2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FC Ground Cable	**6XV1830-3FH10**
2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FC FRNC Cable GP	**6XV1830-0LH10**
2-wire, shielded, flame-retardant, with copolymer outer sheath FRNC; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FastConnect Stripping Tool	**6GK1905-6AA00**
Preadjusted stripping tool for fast stripping of PROFIBUS FastConnect bus cables	
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 180	
180° cable outlet	
1 unit	**6GK1901-1BB10-2AA0**
10 units	**6GK1901-1BB10-2AB0**
50 units	**6GK1901-1BB10-2AE0**
IE FC TP Standard Cable GP 2x2	**6XV1840-2AH10**
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. delivery unit 1000 m, minimum order quantity 20 m	

Standard CPUs

Ordering data

	Article No.
IE FC TP 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 use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	**6XV1840-3AH10**
IE FC TP Marine Cable 2 x 2 (Type B) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	**6XV1840-4AH10**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	**6GK1901-1GA00**
Display For CPU 1515-2 PN, CPU 1516-3 PN/DP and CPU 1518-4 PN/DP; spare part	**6ES7591-1BA00-0AA0**
Front cover for PROFIBUS DP interface Spare part	**6ES7591-8AA00-0AA0**

	Article No.
STEP 7 Professional V13 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64 bit), Windows 7 Enterprise SP1 (64 bit), Windows 7 Ultimate SP1 (64 bit), Windows 8.1 (64 bit), Windows 8.1 Professional (64 bit), Windows 8.1 Enterprise (64 bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Form of delivery: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V13, Floating License	**6ES7822-1AA03-0YA5**
STEP 7 Professional V13, Floating License, software download incl. license key [1] E-mail address required for delivery	**6ES7822-1AE03-0YA5**

[1] For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

Overview SIPLUS CPU 1511-1 PN

- Entry-level CPU in the S7-1500 controller product range
- Suitable for applications with medium requirements for program scope and processing speed
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Isochronous mode
- SIMATIC memory card required for operation of the CPU

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Overview SIPLUS CPU 1513-1 PN

- The CPU for applications with medium/high requirements for program/data storage in the S7-1500 controller product range
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- PROFINET IO Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Isochronous mode
- SIMATIC memory card required for operation of the CPU

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS Standard CPUs

Overview SIPLUS CPU 1516-3 PN/DP

- The CPU with large program and data memory in the S7-1500 controller product range for applications with high program scope requirements.
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET IO IRT interface with 2-port switch
- Additional PROFINET interface with separate IP address
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller.
- PROFIBUS DP master interface
- Isochronous mode on PROFIBUS and PROFINET
- SIMATIC memory card required for operation of the CPU

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1511-1AK00-2AB0 SIPLUS CPU 1511-1 PN	**6AG1513-1AL00-2AB0** SIPLUS CPU 1513-1 PN	**6AG1516-3AN00-2AB0** SIPLUS CPU 1516-3 PN/DP
Based on	**6ES7511-1AK00-0AB0**	**6ES7513-1AL00-0AB0**	**6ES7516-3AN00-0AB0**
Ambient conditions			
Operating temperature			
• horizontal installation, min.	-40 °C; = Tmin; startup @ -25 °C; startup display @ -20 °C	-40 °C; = Tmin; startup @ -25 °C; startup display @ -20 °C	-40 °C; = Tmin; startup @ -25 °C; startup display @ -20 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-40 °C; = Tmin; startup @ -25 °C; startup display @ -20 °C	-40 °C; = Tmin; startup @ -25 °C; startup display @ -20 °C	-40 °C; = Tmin; startup @ -25 °C; startup display @ -20 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Storage/transport temperature			
• Min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
Extended ambient conditions			

• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax
	at 1080 hPa ... 795 hPa
	(-1000 m ... +2000 m) //
	Tmin ... (Tmax - 10K)
	at 795 hPa ... 658 hPa
	(+2000 m ... +3500 m) //
	Tmin ... (Tmax - 20K)
	at 658 hPa ... 540 hPa
	(+3500 m ... +5000 m)
		Tmin ... Tmax
		at 1080 hPa ... 795 hPa
		(-1000 m ... +2000 m) //
		Tmin ... (Tmax - 10K)
		at 795 hPa ... 658 hPa
		(+2000 m ... +3500 m) //
		Tmin ... (Tmax - 20K)
		at 658 hPa ... 540 hPa
		(+3500 m ... +5000 m)
			Tmin ... Tmax at
			1080 hPa ... 795 hPa
			(-1000 m ... +2000 m) //
			Tmin ... (Tmax - 10K)
			at 795 hPa ... 658 hPa
			(+2000 m ... +3500 m) //
			Tmin ... (Tmax - 20K)
			at 658 hPa ... 540 hPa
			(+3500 m ... +5000 m)

• Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Technical specifications (continued)

	6AG1511-1AK00-2AB0 SIPLUS CPU 1511-1 PN	6AG1513-1AL00-2AB0 SIPLUS CPU 1513-1 PN	6AG1516-3AN00-2AB0 SIPLUS CPU 1516-3 PN/DP
Based on	**6ES7511-1AK00-0AB0**	**6ES7513-1AL00-0AB0**	**6ES7516-3AN00-0AB0**
• Resistance			
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS CPU 1511-1 PN (extended temperature range and medial exposure) Work memory 150 KB for program, 1 MB for data, PROFINET IO IRT interface, SIMATIC memory card required	**6AG1511-1AK00-2AB0**
SIPLUS CPU 1513-1 PN (extended temperature range and medial exposure) Work memory 300 KB for program, 1.5 MB for data, PROFINET IO IRT interface, SIMATIC memory card required	**6AG1513-1AL00-2AB0**
SIPLUS CPU 1516-3 PN/DP (extended temperature range and medial exposure) 1 MB RAM for program, 5 MB for data, PROFINET IO IRT interface, PROFINET/PROFIBUS interface; SIMATIC memory card required	**6AG1516-3AN00-2AB0**

	Article No.
Accessories	
Power supply	
(extended temperature range and medial exposure)	
24 V DC input voltage, power 25 W	**6AG1505-0KA00-7AB0**
24/48/60 V DC input voltage, power 60 W	**6AG1505-0RA00-7AB0**
120/230 V AC input voltage, power 60 W	**6AG1507-0RA00-7AB0**
Load power supply	
(extended temperature range and medial exposure)	
24 V DC/3A	**6AG1332-4BA00-7AA0**
24 V DC/8A	**6AG1333-4BA00-7AA0**
Display	**6AG1591-1AA00-2AA0**
(extended temperature range and medial exposure)	
for SIPLUS CPU 1511-1 PN and CPU 1513-1 PN; spare part	
Display	**6AG1591-1BA00-2AA0**
(extended temperature range and medial exposure)	
for SIPLUS CPU 1516-3 PN/DP; spare part	
Further accessories	See SIMATIC S7-1500, Standard CPUs, catalog ST 70 · 2013, page 4/8

Fail-safe CPUs

Overview CPU 1516F-3 PN/DP

- The CPU with a large program and data memory in the S7-1500 controller product range for failsafe applications with high requirements regarding program scope and networking.
- High processing speed for binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O.
- Supports PROFIsafe in centralized and distributed configuration.
- PROFINET IO IRT interface with 2-port switch.
- Additional PROFINET interface with separate IP address.
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller.
- PROFIBUS DP master interface.
- Isochronous mode on PROFIBUS and PROFINET.
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders.
- Integrated Web server with the option of creating user-defined Web pages.

Note:
SIMATIC memory card required for operation of the CPU

Overview CPU 1518F-4 PN/DP

- The CPU with a very large program and data memory in the S7-1500 controller product range for failsafe applications with highest requirements regarding program scope and networking.
- Extremely high processing speed for binary and floating-point arithmetic.
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O.
- Supports PROFIsafe in centralized and distributed configuration.
- PROFINET IO IRT interface with 2-port switch.
- Two additional PROFINET interfaces with separate IP addresses.
- PROFINET IO controller for operating distributed I/O on PROFINET.
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller.
- PROFIBUS DP master interface.
- Isochronous mode on PROFIBUS and PROFINET.
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders
- Integrated Web server with the option of creating user-defined Web pages.

Note:

SIMATIC Memory Card required for operation of the CPU.

Technical specifications

	6ES7516-3FN00-0AB0 CPU 1516F-3 PN/DP	**6ES7518-4FP00-0AB0** CPU 1518F-4PN/DP
General information		
Engineering with		
• STEP 7 TIA Portal can be configured/integrated as of version	V13	V13
Display		
Screen diagonal (cm)	6.1 cm	6.1 cm
Supply voltage		
Type of supply voltage	24 V DC	24 V DC
Power losses		
Power loss, typ.	7 W	24 W
Memory		
Work memory		
• integrated (for program)	1.5 Mbyte	4.5 Mbyte
• integrated (for data)	5 Mbyte	10 Mbyte
Load memory		
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte
CPU processing times		
for bit operations, typ.	10 ns	1 ns
for word operations, typ.	12 ns	2 ns
for fixed point arithmetic, typ.	16 ns	2 ns
for floating point arithmetic, typ.	64 ns	6 ns
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)

Technical specifications (continued)

	6ES7516-3FN00-0AB0 CPU 1516F-3 PN/DP	6ES7518-4FP00-0AB0 CPU 1518F-4PN/DP
S7 times		
• Number	2 048	2 048
IEC timer		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity		
Flag		
• Number, max.	16 kbyte	16 kbyte
Address area		
I/O address area		
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day		
Clock		
• Type	Hardware clock	Hardware clock
Interfaces		
1st interface		
• Interface types		
- Number of ports	2	2
- Integrated switch	Yes	Yes
- RJ 45 (Ethernet)	Yes	Yes
• Protocols		
- PROFINET IO Controller	Yes	Yes
- PROFINET IO Device	Yes	Yes
- SIMATIC communication	Yes	Yes
- Open IE communication	Yes	Yes
- Web server	Yes	Yes
- Media redundancy	Yes	Yes
2nd interface		
• Interface types		
- Number of ports	1	1
- Integrated switch	No	No
- RJ 45 (Ethernet)	Yes	Yes
• Protocols		
- PROFINET IO Controller	No	No
- PROFINET IO Device	No	No
- SIMATIC communication	Yes	Yes
- Open IE communication	Yes	Yes
- Web server	Yes	Yes
3rd interface		
• Interface types		
- Number of ports	1	1
- Integrated switch		No
- RJ 45 (Ethernet)		Yes
- RS 485	Yes	
• Protocols		
- PROFINET IO Controller		No
- PROFINET IO Device		No
- SIMATIC communication	Yes	Yes
- Open IE communication		Yes
- Web server		Yes
- PROFIBUS DP master	Yes	
- PROFIBUS DP slave	No	
4th interface		
• Interface types		
- Number of ports		1
- RS 485		Yes
• Protocols		
- SIMATIC communication		Yes
- PROFIBUS DP master		Yes
- PROFIBUS DP slave		No
Protocols		
Number of connections		
• Number of connections, max.	256	384

Technical specifications (continued)

	6ES7516-3FN00-0AB0 CPU 1516F-3 PN/DP	6ES7518-4FP00-0AB0 CPU 1518F-4PN/DP
PROFINET IO Controller		
• Services		
- Max. number of connectable IO devices for RT	256	512
- Number of IO Devices with IRT and the option "high performance", max.	64	64
PROFIBUS		
• Services		
- Number of DP slaves	125	125
Isochronous mode		
Isochronous operation (application synchronized up to terminal)	Yes	Yes
supported technology objects		
Motion	Yes	Yes
• Speed-controlled axis		
- Number of speed-controlled axes, max.	20; Up to 20 axes in total (speed-controlled, positioning axis, external encoders) are supported	128; Up to 128 axes in total (speed-controlled, positioning axis, external encoders) are supported
• Positioning axis		
- Number of positioning axes, max.	20; Up to 20 axes in total (speed-controlled, positioning axis, external encoders) are supported	128; Up to 128 axes in total (speed-controlled, positioning axis, external encoders) are supported
• External encoders		
- Number of external encoders, max.	20; Up to 20 axes in total (speed-controlled, positioning axis, external encoders) are supported	128; Up to 128 axes in total (speed-controlled, positioning axis, external encoders) are supported
Controller		
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
Counting and measuring		
• High-speed counter	Yes	Yes
Ambient conditions		
Operating temperature		
• horizontal installation, min.	0 °C	0 °C
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	0 °C	0 °C
• vertical installation, max.	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Configuration		
programming		
• Programming language		
- LAD	Yes	Yes
- FBD	Yes	Yes
- STL	Yes	Yes
- SCL	Yes	Yes
- GRAPH	Yes	Yes
Know-how protection		
• User program protection	Yes	Yes
• Copy protection	Yes	Yes
• Block protection	Yes	Yes
Access protection		
• Password for display	Yes	Yes
• Protection level: Write protection	Yes	Yes
• Protection level: Read/write protection	Yes	Yes
• Protection level: Complete protection	Yes	Yes
Dimensions		
Width	70 mm	175 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	845 g	1 988 g

Ordering data	Article No.
CPU 1516F-3 PN/DP	**6ES7516-3FN00-0AB0**
Fail-safe CPU, 1.5 MB RAM for program, 5 MB for data, PROFINET IO IRT interface, PROFINET/PROFIBUS interface; SIMATIC memory card required	
CPU 1518F-4 PN/DP	**6ES7518-4FP00-0AB0**
Fail-safe CPU, 4.5 MB RAM for program, 10 MB for data, PROFINET IO IRT interface, 2 PROFINET interfaces, PROFIBUS interface; SIMATIC Memory Card required	
Accessories	
SIMATIC memory card	
4 MB	**6ES7954-8LC02-0AA0**
12 MB	**6ES7954-8LE02-0AA0**
24 MB	**6ES7954-8LF02-0AA0**
2 GB	**6ES7954-8LP01-0AA0**
SIMATIC S7-1500 mounting rail	
Fixed lengths, with grounding elements	
• 160 mm	**6ES7590-1AB60-0AA0**
• 482 mm	**6ES7590-1AE80-0AA0**
• 530 mm	**6ES7590-1AF30-0AA0**
• 830 mm	**6ES7590-1AJ30-0AA0**
For cutting to length by customer, without drill holes; grounding elements must be ordered separately	
• 2000 mm	**6ES7590-1BC00-0AA0**
PE connection element for mounting rail 2000 mm	**6ES7590-5AA00-0AA0**
20 units	
Power supply	
For supplying the backplane bus of the S7-1500	
24 V DC input voltage, power 25 W	**6ES7505-0KA00-0AB0**
24/48/60 V DC input voltage, power 60 W	**6ES7505-0RA00-0AB0**
120/230 V AC input voltage, power 60 W	**6ES7507-0RA00-0AB0**
Power connector	**6ES7590-8AA00-0AA0**
With coding element for power supply module; spare part, 10 units	
Load power supply	
24 V DC/3A	**6EP1332-4BA00**
24 V DC/8A	**6EP1333-4BA00**
Power supply connector	
Spare part; for connecting the 24 V DC supply voltage	
• with push-in terminals	**6ES7193-4JB00-0AA0**
PROFIBUS FastConnect bus connector RS485 with 90° cable outlet	
with insulation displacement, max. transmission rate 12 Mbit/s	
without PG interface, grounding via control cabinet contact surface; 1 unit	**6ES7972-0BA70-0XA0**
with PG interface, grounding via control cabinet contact surface; 1 unit	**6ES7972-0BB70-0XA0**

	Article No.
PROFIBUS FC Standard Cable GP	**6XV1830-0EH10**
Standard type with special design for fast mounting, 2-core, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FC Robust Cable	**6XV1830-0JH10**
2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FC Flexible Cable	**6XV1831-2K**
2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FC Trailing Cable	
2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
Sheath color: Petrol	**6XV1830-3EH10**
Sheath color: Violet	**6XV1831-2L**
PROFIBUS FC Food Cable	**6XV1830-0GH10**
2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FC Ground Cable	**6XV1830-3FH10**
2-wire, shielded; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FC FRNC Cable GP	**6XV1830-0LH10**
2-wire, shielded, flame-retardant, with copolymer outer sheath FRNC; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	
PROFIBUS FastConnect Stripping Tool	**6GK1905-6AA00**
Preadjusted stripping tool for fast stripping of PROFIBUS FastConnect bus cables	
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 180	
180° cable outlet	
1 unit	**6GK1901-1BB10-2AA0**
10 units	**6GK1901-1BB10-2AB0**
50 units	**6GK1901-1BB10-2AE0**
IE FC TP Standard Cable GP 2x2	**6XV1840-2AH10**
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. delivery unit 1000 m, minimum order quantity 20 m	

Fail-safe CPUs

Ordering data

	Article No.
IE FC TP 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 use as trailing cable; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	**6XV1840-3AH10**
IE FC TP Marine Cable 2 x 2 (Type B) 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 with marine approval, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	**6XV1840-4AH10**
IE FC Stripping Tool Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	**6GK1901-1GA00**
Display For CPU 1516-3 PN/DP, CPU 1518-4 PN/DP; spare part	**6ES7591-1BA00-0AA0**

	Article No.
STEP 7 Professional V13 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64 bit), Windows 7 Enterprise SP1 (64 bit), Windows 7 Ultimate SP1 (64 bit), Windows 8.1 (64 bit), Windows 8.1 Professional (64 bit), Windows 8.1 Enterprise (64 bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Form of delivery: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V13, Floating License	**6ES7822-1AA03-0YA5**
STEP 7 Professional V13, Floating License, software download incl. license key [1] E-mail address required for delivery	**6ES7822-1AE03-0YA5**
STEP 7 Safety Advanced V13 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13	
Floating License for 1 user	**6ES7833-1FA13-0YA5**
Floating License for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FA13-0YH5**

[1] For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

Overview

- 16 and 32-channel digital input modules
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs
- 35 mm wide modules with parameters and diagnostic functions
- 25 mm wide modules for use in tight spaces: particularly economical, without parameters or diagnostic functions

Technical specifications

	6ES7521-1BH00-0AB0 DI 16x24 V DC HF	**6ES7521-1BL00-0AB0** DI 32x24 V DC HF	**6ES7521-1BH50-0AA0** DI 16x24 V DC SRC BA	**6ES7521-1FH00-0AA0** DI 16x230 V AC BA
General information				
Product function				
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with				
• STEP 7 TIA Portal can be configured/integrated as of version	V12 / V12	V12 / V12	V12 / V12	V12 / V12
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -
Operating mode				
• MSI	Yes	Yes	Yes	Yes
Supply voltage				
Type of supply voltage	DC	DC		
Rated value (DC)	24 V	24 V		
Reverse polarity protection	Yes	Yes		
Digital inputs				
Number of digital inputs	16	32	16	16
m/p-reading	p-reading	p-reading	m-reading	p-reading
Input characteristic curve in accordance with IEC 61131, type 1				Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes	Yes	Yes	
Input voltage				
• Type of input voltage	DC	DC	DC	AC
• Rated value, AC				230 V; 120/230 V AC; 60/50 Hz
• Rated value, DC	24 V	24 V	24 V	
• for signal "0"	-30 to +5 V	-30 to +5 V	30 to -5 V	0 to 40 V AC
• for signal "1"	11 to 30 V	11 to 30 V	-11 to -30 V	79 to 264 V AC
Input current				
• for signal "1", typ.	2.5 mA	2.5 mA	4.5 mA	11 mA; At 230 V AC and 5.5 mA at 120 V AC
Input delay (for rated value of input voltage)				
• for standard inputs				
- Parameterizable	Yes; 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms	Yes; 0.05 / 0.1 / 0.4 / 1.6 / 3.2 / 12.8 / 20 ms	No	No
• for interrupt inputs				
- Parameterizable	Yes	Yes	No	No

Technical specifications (continued)

	6ES7521-1BH00-0AB0 DI 16x24 V DC HF	6ES7521-1BL00-0AB0 DI 32x24 V DC HF	6ES7521-1BH50-0AA0 DI 16x24 V DC SRC BA	6ES7521-1FH00-0AA0 DI 16x230 V AC BA
Cable length				
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m
• Cable length unshielded, max.	600 m	600 m	600 m	600 m
Encoder				
Connectable encoders				
• 2-wire sensor	Yes	Yes	Yes	Yes
- Permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA	1.5 mA	2 mA
Isochronous mode				
Isochronous operation (application synchronized up to terminal)	Yes	Yes	No	No
Filtering and processing time (TCI), min.	80 µs; At 50 µs filter time	80 µs; At 50 µs filter time		
Bus cycle time (TDP), min.	250 µs	250 µs		
Interrupts/diagnostics/status information				
Alarms				
• Diagnostic alarm	Yes	Yes	No	No
• Hardware interrupt	Yes	Yes	No	No
Diagnostic messages				
• Diagnostics	Yes	Yes	No	
• Monitoring the supply voltage	Yes	Yes	No	No
• Wire break	Yes; to I < 350 µA	Yes; to I < 350 µA	No	No
• Short circuit	No	No	No	No
• Fuse blown	No	No	No	No
Diagnostics indication LED				
• RUN LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED	Yes; Red LED	Yes; Red LED
• Monitoring the supply voltage	Yes; Green LED	Yes; Green LED	No	No
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	Yes; Red LED	Yes; Red LED	No	No
• for module diagnostics	Yes; Red LED	Yes; Red LED	No	Yes; Red LED
Galvanic isolation				
Electrical isolation channels				
• between the channels and the backplane bus	Yes	Yes	Yes	Yes
Isolation				
Isolation checked with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	2500 V DC
Decentralized operation				
Prioritized startup	Yes	Yes	Yes	Yes
Dimensions				
Width	35 mm	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm
Weights				
Weight, approx.	240 g	260 g	230 g	300 g

Technical specifications (continued)

	6ES7521-1BH10-0AA0 DI 16 x 24 V DC BA	6ES7521-1BL10-0AA0 DI 32 x 24 V DC BA
General information		
Product function		
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with		
• STEP 7 TIA Portal can be configured/integrated as of version	V13 / V13	V13 / V13
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -
Operating mode		
• MSI	Yes	Yes
Supply voltage		
Type of supply voltage	DC	DC
Rated value (DC)	24 V	24 V
Digital inputs		
Number of digital inputs	16	32
m/p-reading	p-reading	p-reading
Input characteristic curve in accordance with IEC 61131, type 3	Yes	Yes
Input voltage		
• Rated value, DC	24 V	24 V
• for signal "0"	-30 to +5 V	-30 to +5 V
• for signal "1"	11 to 30 V	11 to 30 V
Input current		
• for signal "1", typ.	2.7 mA	2.7 mA
Input delay (for rated value of input voltage)		
• for standard inputs		
- Parameterizable	No	No
• for interrupt inputs		
- Parameterizable	No	No
Cable length		
• Cable length, shielded, max.	1 000 m	1 000 m
• Cable length unshielded, max.	600 m	600 m
Encoder		
Connectable encoders		
• 2-wire sensor	Yes	Yes
- Permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA
Isochronous mode		
Isochronous operation (application synchronized up to terminal)	No	No
Interrupts/diagnostics/status information		
Alarms		
• Diagnostic alarm	No	No
• Hardware interrupt	No	No
Diagnostic messages		
• Diagnostics	No	No
• Monitoring the supply voltage	No	No
• Wire break	No	No
• Short circuit	No	No
• Fuse blown	No	No
Diagnostics indication LED		
• RUN LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED
• MAINT LED	No	No
• Monitoring the supply voltage	No	No
• Channel status display	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	No
• for module diagnostics	No	No

SM 521 digital input modules

Technical specifications (continued)

	6ES7521-1BH10-0AA0 DI 16 x 24 V DC BA	6ES7521-1BL10-0AA0 DI 32 x 24 V DC BA
Galvanic isolation		
Electrical isolation channels		
• between the channels and the backplane bus	Yes	Yes
Isolation		
Isolation checked with	707 V DC (type test)	707 V DC (type test)
Decentralized operation		
Prioritized startup	Yes	Yes
Dimensions		
Width	25 mm	25 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	230 g	260 g

Ordering data

	Article No.
SM 521 digital input modules	
Module width 35 mm; with parameters and diagnostic functions	
16 inputs, 24 V DC, isolated, parameterizable diagnostics and hardware interrupts	**6ES7521-1BH00-0AB0**
32 inputs, 24 V DC, isolated, parameterizable diagnostics and hardware interrupts	**6ES7521-1BL00-0AB0**
16 inputs, 24 V DC, isolated, input delay 3.2 ms	**6ES7521-1BH50-0AA0**
16 inputs, 230 V AC, isolated, input delay 20 ms	**6ES7521-1FH00-0AA0**
Module width 25 mm; without parameters or diagnostic functions; front connector (push-in) included in scope of delivery	
16 inputs, 24 V DC, isolated	**6ES7521-1BH10-0AA0**
32 inputs, 24 V DC, isolated	**6ES7521-1BL10-0AA0**

	Article No.
Accessories	
Front connectors	
For 35 mm modules; including four potential bridges, cable ties and individual labeling strips, 40-pin	
• Screw terminals	**6ES7592-1AM00-0XB0**
• Push-in	**6ES7592-1BM00-0XB0**
For 25 mm modules; including cable ties and individual labeling strips; push-in terminal 40-pin; spare part	**6ES7592-1BM00-0XA0**
Potential bridges for front connectors	**6ES7592-3AA00-0AA0**
20 units; spare part	
DIN A4 labeling sheets	
For 35 mm modules; 10 sheets with 10 labeling strips each for I/O modules; perforated, Al gray	**6ES7592-2AX00-0AA0**
For 25 mm modules; 10 sheets with 10 labeling strips each for I/O modules; perforated, Al gray	**6ES7592-1AX00-0AA0**
U connector	**6ES7590-0AA00-0AA0**
5 units; spare part	
Universal front door for I/O modules	
For 35 mm modules; 5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part	**6ES7528-0AA00-7AA0**
For 25 mm modules; 5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part	**6ES7528-0AA00-0AA0**

Overview

- 8, 16 and 32-channel digital output modules
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional outputs
- 35 mm wide modules with parameters and diagnostic functions
- 25 mm wide modules for use in tight spaces: particularly economical, without parameters or diagnostic functions

Technical specifications

	6ES7522-1BH00-0AB0 DQ 16x24VDC/0.5A ST	**6ES7522-1BL00-0AB0** DQ 32x24V DC/0.5 A ST	**6ES7522-1BF00-0AB0** DQ 8x24VDC/2A HF	**6ES7522-5HF00-0AB0** DQ 8x230 V AC/5 A ST (relay)	**6ES7522-5FF00-0AB0** DQ 8x230 V AC/2A ST (triac)
General information					
Product function					
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with					
• STEP 7 TIA Portal can be configured/integrated as of version	V12 / V12	V12 / V12	V12 / V12	V12 / V12	V12 / V12
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -
Operating mode					
• MSO	Yes	Yes	Yes	Yes	Yes
Supply voltage					
Type of supply voltage	DC	DC	DC	DC	
Rated value (DC)	24 V	24 V	24 V	24 V	
Reverse polarity protection	Yes; through internal protection with 7 A per group	Yes; through internal protection with 7 A per group	Yes; through internal protection with 10 A per group	Yes	
Digital outputs					
Type of digital output	Transistor	Transistor	Transistor	Relays	Triac
Number of digital outputs	16	32	8	8	8
Current-sinking				Yes	
Current-sourcing	Yes	Yes	Yes	Yes	Yes
Digital outputs, configurable	Yes	Yes	Yes	Yes	Yes
Short-circuit protection	Yes; Clocked electronically	Yes; Clocked electronically	Yes; Clocked electronically	No	No
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-53 V)	-17 V		
Controlling a digital input	Yes	Yes	Yes	possible	

Technical specifications (continued)

	6ES7522-1BH00-0AB0 DQ 16x24VDC/0.5A ST	6ES7522-1BL00-0AB0 DQ 32x24V DC/0.5 A ST	6ES7522-1BF00-0AB0 DQ 8x24VDC/2A HF	6ES7522-5HF00-0AB0 DQ 8x230 V AC/5 A ST (relay)	6ES7522-5FF00-0AB0 DQ 8x230 V AC/2A ST (triac)
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	10 W	1 500 W; 10,000 operating cycles	50 W
• Low energy/fluorescent lamps with electronic control gear				10 X 58 W (25,000 operating cycles)	
• Fluorescent tubes, conventionally compensated				1 X 58 W (25,000 operating cycles)	
• Fluorescent tubes, uncompensated				10 X 58 W (25,000 operating cycles)	
Load resistance range					
• lower limit	48 Ω	48 Ω	12 Ω		
• upper limit	12 kΩ	12 kΩ	4 kΩ		
Output voltage					
• Type of output voltage	DC	DC	DC		AC
• for signal "1", min.	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)		L1 (-1.5 V) at maximum output current; L1 (-8.5 V) at minimum output current
Output current					
• for signal "1" rated value	0.5 A	0.5 A	2 A	5 A	2 A
• for signal "0" residual current, max.	0.5 mA	0.5 mA	0.5 mA	0 A	2 mA
Output delay with resistive load					
• "0" to "1", max.	100 µs	100 µs	100 µs		1 AC cycle
• "1" to "0", max.	500 µs	500 µs	500 µs		1 AC cycle
Parallel switching of 2 outputs					
• for logic links	Yes	Yes	Yes	Yes	No
• for increased power	No	No	No	No	No
• for redundant control of a load	Yes	Yes	Yes	Yes	Yes
Switching frequency					
• with resistive load, max.	100 Hz	100 Hz	100 Hz	2 Hz	10 Hz
• with inductive load, max.	0.5 Hz; to IEC 947-5-1, DC-13	0.5 Hz; to IEC 947-5-1, DC-13	0.5 Hz; to IEC 947-5-1, DC-13	0.5 Hz	0.5 Hz
• on lamp load, max.	10 Hz	10 Hz	10 Hz	2 Hz	1 Hz
Aggregate current of the outputs					
• Max. current per channel	0.5 A; see additional description in the manual	0.5 A; see additional description in the manual	2 A; see additional description in the manual	8 A; see additional description in the manual	2 A; see additional description in the manual
• Max. current per group	4 A; see additional description in the manual	4 A; see additional description in the manual	8 A; see additional description in the manual	8 A; see additional description in the manual	2 A; see additional description in the manual
• Max. current per module	8 A; see additional description in the manual	16 A; see additional description in the manual	16 A; see additional description in the manual	64 A; see additional description in the manual	10 A; see additional description in the manual

Technical specifications (continued)

	6ES7522-1BH00-0AB0 DQ 16x24VDC/0.5A ST	6ES7522-1BL00-0AB0 DQ 32x24V DC/0.5 A ST	6ES7522-1BF00-0AB0 DQ 8x24VDC/2A HF	6ES7522-5HF00-0AB0 DQ 8x230 V AC/5 A ST (relay)	6ES7522-5FF00-0AB0 DQ 8x230 V AC/2A ST (triac)
Relay outputs					
• Number of relay outputs				8	
• Rated input voltage of relay coil L+ (DC)				24 V	
• Current consumption of relays (coil current of all relays), max.				80 mA	
• external protection for relay outputs				With miniature circuit breaker with characteristic B for: cos φ 1.0: 600 A cos φ 0.5 ... 0.7: 900 A with 8 A Diazed fuse: 1000 A	
• Contact connection (internal)				No	
• Size of motor starters according to NEMA, max.				5	
• Number of operating cycles, max.				4 000 000; see additional description in the manual	
• Relay approved acc. to UL 508				Yes; 250 V AC/5 A g.p.; 120 V AC TV-4 tungsten; A300, R300	
• Switching capacity of contacts					
- with inductive load, max.				see additional description in the manual	
- with resistive load, max.				see additional description in the manual	
Triac outputs					
• Size of motor starters according to NEMA, max.					5
Cable length					
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• Cable length unshielded, max.	600 m	600 m	600 m	600 m	600 m
Isochronous mode					
Isochronous operation (application synchronized up to terminal)	Yes	Yes	No	No	No
Execution and activation time (TCO), min.	70 µs	70 µs			
Bus cycle time (TDP), min.	250 µs	250 µs			
Interrupts/ diagnostics/ status information					
Substitute values connectable	Yes	Yes	Yes	Yes	Yes
Alarms					
• Diagnostic alarm	Yes	Yes	Yes	Yes	No
Diagnostic messages					
• Diagnostics	Yes	Yes	Yes	Yes	No
• Monitoring the supply voltage	Yes	Yes	Yes	Yes	No
• Wire break	No	No	No	No	No
• Short circuit	Yes	Yes	Yes	No	No
• Fuse blown	No	No	No		No
Diagnostics indication LED					
• RUN LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED	Yes; Red LED	Yes; Red LED	Yes; Red LED
• Monitoring the supply voltage	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	No
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	No	No	Yes; Red LED	No	No
• for module diagnostics	Yes; Red LED	Yes; Red LED	Yes; Red LED	Yes; Red LED	Yes; Red LED

Technical specifications (continued)

	6ES7522-1BH00-0AB0 DQ 16x24VDC/0.5A ST	6ES7522-1BL00-0AB0 DQ 32x24V DC/0.5 A ST	6ES7522-1BF00-0AB0 DQ 8x24VDC/2A HF	6ES7522-5HF00-0AB0 DQ 8x230 V AC/5 A ST (relay)	6ES7522-5FF00-0AB0 DQ 8x230 V AC/2A ST (triac)
Galvanic isolation					
Electrical isolation channels					
• between the channels and the backplane bus	Yes	Yes	Yes	Yes	Yes
Isolation					
Isolation checked with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	Between the channels: 2500 V DC; between the channels and backplane bus: 2500 V DC; between L+ backplane bus 707 V DC (type test)	2500 V DC
Decentralized operation					
Prioritized startup	Yes	Yes	Yes	Yes	Yes
Dimensions					
Width	35 mm	35 mm	35 mm	35 mm	35 mm
Height	147 mm	147 mm	147 mm	147 mm	147 mm
Depth	129 mm	129 mm	129 mm	129 mm	129 mm
Weights					
Weight, approx.	230 g	280 g	240 g	350 g	290 g

	6ES7522-1BH10-0AA0 DQ 16 x 24 V DC / 0.5 A BA	6ES7522-1BL10-0AA0 DQ 32 x 24 V DC / 0.5 A BA
General information		
Product function		
• I&M data	Yes	Yes
Engineering with		
• STEP 7 TIA Portal can be configured/integrated as of version	V13 / V13	V13 / V13
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -
Operating mode		
• MSO	Yes	Yes
Supply voltage		
Type of supply voltage	DC	DC
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes; through internal protection with 7 A per group	Yes; through internal protection with 7 A per group
Digital outputs		
Type of digital output	Transistor	Transistor
Number of digital outputs	16	32
Current-sourcing	Yes	Yes
Digital outputs, configurable	No	No
Short-circuit protection	Yes	Yes
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-53 V)
Controlling a digital input	Yes	Yes
Switching capacity of the outputs		
• with resistive load, max.	0.5 A	0.5 A
• on lamp load, max.	5 W	5 W
Load resistance range		
• lower limit	48 Ω	48 Ω
• upper limit	12 kΩ	12 kΩ
Output voltage		
• Type of output voltage	DC	DC
• for signal "1", min.	L+ (-0.8 V)	L+ (-0.8 V)
Output current		
• for signal "1" rated value	0.5 A	0.5 A
• for signal "0" residual current, max.	0.5 mA	0.5 mA
Output delay with resistive load		
• "0" to "1", max.	100 µs	100 µs
• "1" to "0", max.	500 µs	500 µs

Technical specifications (continued)

	6ES7522-1BH10-0AA0 DQ 16 x 24 V DC / 0.5 A BA	6ES7522-1BL10-0AA0 DQ 32 x 24 V DC / 0.5 A BA
Parallel switching of 2 outputs		
• for logic links	Yes	Yes
• for increased power	No	No
• for redundant control of a load	Yes	Yes
Switching frequency		
• with resistive load, max.	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz; to IEC 947-5-1, DC-13	0.5 Hz; to IEC 947-5-1, DC-13
• on lamp load, max.	10 Hz	10 Hz
Aggregate current of the outputs		
• Max. current per channel	0.5 A; see additional description in the manual	0.5 A; see additional description in the manual
• Max. current per group	4 A; see additional description in the manual	4 A; see additional description in the manual
• Max. current per module	8 A; see additional description in the manual	16 A; see additional description in the manual
Cable length		
• Cable length, shielded, max.	1 000 m	1 000 m
• Cable length unshielded, max.	600 m	600 m
Interrupts/diagnostics/status information		
Substitute values connectable	No	No
Alarms		
• Diagnostic alarm	No	No
Diagnostic messages		
• Diagnostics	No	No
Diagnostics indication LED		
• RUN LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED
• MAINT LED	No	No
• Monitoring the supply voltage	Yes; Green LED	Yes; Green LED
• Channel status display	Yes; Green LED	Yes; Green LED
Galvanic isolation		
Electrical isolation channels		
• between the channels and the backplane bus	Yes	Yes
Isolation		
Isolation checked with	707 V DC (type test)	707 V DC (type test)
Decentralized operation		
Prioritized startup	Yes	Yes
Dimensions		
Width	25 mm	25 mm
Height	147 mm	147 mm
Depth	129 mm	129 mm
Weights		
Weight, approx.	230 g	280 g

SM 522 digital output modules

Ordering data	Article No.
SM 522 digital output modules	
Module width 35 mm; with parameters and diagnostic functions	
8 outputs, 24 V DC; 2 A, isolated	**6ES7522-1BF00-0AB0**
16 outputs, 24 V DC; 0.5 A, isolated	**6ES7522-1BH00-0AB0**
32 outputs, 24 V DC; 0.5 A, isolated	**6ES7522-1BL00-0AB0**
8 relay outputs, 230 V AC, 5 A	**6ES7522-5HF00-0AB0**
8 outputs (triac), 230 V AC, 2 A	**6ES7522-5FF00-0AB0**
Module width 25 mm; without parameters or diagnostic functions; front connector (push-in) included in scope of delivery	
16 outputs, 24 V DC; 0.5 A, isolated	**6ES7 522-1BH10-0AA0**
32 outputs, 24 V DC; 0.5 A, isolated	**6ES7 522-1BL10-0AA0**

Accessories	Article No.
Front connectors	
For 35 mm modules; including four potential bridges, cable ties and individual labeling strips, 40-pin	
• Screw terminals	**6ES7592-1AM00-0XB0**
• Push-in	**6ES7592-1BM00-0XB0**
For 25 mm modules; including cable ties and individu al labeling strips; push-in terminal 40-pin; spare part	**6ES7592-1BM00-0XA0**
Potential bridges for front connectors	**6ES7592-3AA00-0AA0**
20 units; spare part	
DIN A4 labeling sheets	
For 35 mm modules; 10 sheets with 10 labeling strips each for I/O modules; perforated, Al gray	**6ES7592-2AX00-0AA0**
For 25 mm modules; 10 sheets with 10 labeling strips each for I/O modules; perforated, Al gray	**6ES7592-1AX00-0AA0**
U connector	**6ES7590-0AA00-0AA0**
5 units; spare part	
Universal front door for I/O modules	
For 35 mm modules; 5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part	**6ES7528-0AA00-7AA0**
For 25 mm modules; 5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part	**6ES7528-0AA00-0AA0**

Overview

- 16 digital inputs and 16 digital outputs
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs and outputs
- For use in the tightest spaces: particularly economical, without parameters or diagnostic functions

Technical specifications

	6ES7523-1BL00-0AA0 DI 16x24VDC / DQ16x24VDC/0.5A BA
General information	
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal can be configured/integrated as of version	V13 / V13
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -
Operating mode	
• MSI	Yes
• MSO	Yes
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	24 V
Reverse polarity protection	Yes; through internal protection with 7 A per group
Digital inputs	
Number of digital inputs	16
m/p-reading	p-reading
Input characteristic curve in accordance with IEC 61131, type 3	Yes
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 "1", typ.	2.7 mA
Input delay (for rated value of input voltage)	
• for standard inputs	
- Parameterizable	No
• for interrupt inputs	
- Parameterizable	No
Cable length	
• Cable length, shielded, max.	1 000 m
• Cable length unshielded, max.	600 m
Digital outputs	
Type of digital output	transistor
Number of digital outputs	16
Current-sourcing	Yes
Short-circuit protection	Yes
Limitation of inductive shutdown voltage to	L+ (-53 V)
Controlling a digital input	Yes
Switching capacity of the outputs	
• with resistive load, max.	0.5 A
• on lamp load, max.	5 W
Load resistance range	
• lower limit	48 Ω
• upper limit	12 kΩ
Output voltage	
• Type of output voltage	DC
• for signal "1", min.	L+ (-0.8 V)
Output current	
• for signal "1" rated value	0.5 A
• for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
• "0" to "1", max.	100 µs
• "1" to "0", max.	500 µs
Parallel switching of 2 outputs	
• for logic links	Yes
• for increased power	No
• for redundant control of a load	Yes
Switching frequency	
• with resistive load, max.	100 Hz
• with inductive load, max.	0.5 Hz
• on lamp load, max.	10 Hz
Aggregate current of the outputs	
• Max. current per channel	0.5 A; see additional description in the manual
• Max. current per group	4 A; see additional description in the manual
• Max. current per module	8 A; see additional description in the manual
Cable length	
• Cable length, shielded, max.	1 000 m
• Cable length unshielded, max.	600 m
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
- Permissible quiescent current (2-wire sensor), max.	1.5 mA
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No

SM 523 digital input/output modules

Technical specifications (continued)

	6ES7523-1BL00-0AA0 DI 16x24VDC / DQ16x24VDC/0.5A BA
Interrupts/diagnostics/ status information	
Substitute values connectable	No
Alarms	
• Diagnostic alarm	No
• Hardware interrupt	No
Diagnostic messages	
• Diagnostics	No
• Monitoring the supply voltage	No
• Wire break	No
• Short circuit	No
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• MAINT LED	No
• Monitoring the supply voltage	Yes; Green LED
• Channel status display	Yes; Green LED
• for channel diagnostics	No
• for module diagnostics	No
Galvanic isolation	
Electrical isolation channels	
• between the channels and the backplane bus	Yes
Isolation	
Isolation checked with	707 V DC (type test)
Decentralized operation	
Prioritized startup	Yes
Dimensions	
Width	25 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	280 g

Ordering data

	Article No.
SM 523 digital input/output module Module width 25 mm; without parameters or diagnostic functions; front connector (push-in) included in scope of delivery	
16 inputs, 24 V DC, isolated; 16 outputs, 24 V DC; 0.5 A, isolated	**6ES7523-1BL00-0AA0**
Accessories	
Front connectors For 25 mm modules; including cable ties and individual labeling strips; push-in terminal 40-pin; spare part	**6ES7592-1BM00-0XA0**
Potential bridges for front connectors 20 units; spare part	**6ES7592-3AA00-0AA0**
DIN A4 labeling sheets For 25 mm modules; 10 sheets with 10 labeling strips each for I/O modules; perforated, Al gray	**6ES7592-1AX00-0AA0**
U connector 5 units; spare part	**6ES7590-0AA00-0AA0**
Universal front door for I/O modules For 25 mm modules; 5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part	**6ES7528-0AA00-0AA0**

Overview

- 16 and 32-channel digital input modules
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional inputs

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1521-1BH00-7AB0 DI 16x24 V DC HF	6AG1521-1BL00-7AB0 DI 32x24 V DC HF	6AG1521-1BH50-7AA0 DI 16x24 V DC SRC BA	6AG1521-1FH00-7AA0 DI 16x230 V AC BA
Based on	**6ES7521-1BH00-0AB0**	**6ES7521-1BL00-0AB0**	**6ES7521-1BH50-0AA0**	**6ES7521-1FH00-0AA0**
Ambient conditions				
Operating temperature				
• horizontal installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax	70 °C; = Tmax; > +60 °C number of simultaneously controllable inputs max. 16	70 °C; = Tmax; > +60 °C number of simultaneously controllable inputs max. 8	70 °C; = Tmax; > +60 °C number of simultaneously controllable inputs max. 8
• vertical installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin
• vertical installation, max.	40 °C; = Tmax	40 °C; = Tmax	40 °C; = Tmax	40 °C; = Tmax
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
• Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
• Resistance				
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

Ordering data

	Article No.
SIPLUS SM 521 digital input modules	
(extended temperature range and medial exposure)	
16 inputs, 24 V DC, isolated, parameterizable diagnostics and hardware interrupts	**6AG1521-1BH00-7AB0**
32 inputs, 24 V DC, isolated, parameterizable diagnostics and hardware interrupts	**6AG1521-1BL00-7AB0**
16 inputs, 24 V DC, isolated, input delay 3.2 ms	**6AG1521-1BH50-7AA0**
16 inputs, 230 V AC, isolated, input delay 20 ms	**6AG1521-1FH00-7AA0**
Accessories	See SIMATIC S7-1500 SM 521 digital input modules, page 4/18

SIPLUS SM 522 digital modules

Overview

- 16 and 32-channel digital output modules
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional outputs

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1522-1BF00-7AB0 DQ 8x24VDC/2A HF	**6AG1522-1BH00-7AB0** DQ 16x24VDC/0.5A ST	**6AG1522-1BL00-7AB0** DQ 32x24V DC/0.5 A ST	**6AG1522-5HF00-2AB0** DQ 8x230 V AC/5 A ST (relay)	**6AG1522-5FF00-7AB0** DQ 8x230 V AC/2A ST (triac)
Based on	**6ES7522-1BF00-0AB0**	**6ES7522-1BH00-0AB0**	**6ES7522-1BL00-0AB0**	**6ES7522-5HF00-0AB0**	**6ES7522-5FF00-0AB0**
Ambient conditions					
Operating temperature					
• horizontal installation, min.	-40 °C; = Tmin	-25 °C; = Tmin	-40 °C; = Tmin	-25 °C; = Tmin	-40 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; > +60 °C Number of simultaneously controllable outputs max. 8x 0.5 A, max. total current per group 2 A	70 °C; = Tmax; > +60 °C Number of simultaneously controllable outputs max. 8x 0.5 A, max. total current per group 2 A	70 °C; = Tmax	60 °C; = Tmax	70 °C; = Tmax; > +60 °C number of simultaneously controllable outputs max. 8x 0.25 A, max. total current 2 A
• vertical installation, min.	-40 °C; = Tmin	-25 °C; = Tmin	-40 °C; = Tmin	-25 °C; = Tmin	-40 °C; = Tmin
• vertical installation, max.	40 °C; = Tmax	40 °C; = Tmax	50 °C; = Tmax	40 °C; = Tmax	40 °C; = Tmax
Extended ambient conditions					
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
• Relative humidity					
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)				
• Resistance					
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!				
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!				
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!				

Ordering data

	Article No.
SIPLUS SM 522 digital output modules	
(extended temperature range and medial exposure)	
8 outputs, 24 V DC; 2 A, isolated	**6AG1522-1BF00-7AB0**
16 outputs, 24 V DC; 0.5 A, isolated	**6AG1522-1BH00-7AB0**
32 outputs, 24 V DC; 0.5 A, isolated	**6AG1522-1BL00-7AB0**
8 relay outputs, 230 V AC, 5 A	**6AG1522-5HF00-2AB0**
8 outputs (triac), 230 V AC, 2 A	**6AG1522-5FF00-7AB0**
Accessories	See SIMATIC S7-1500 SM 522 digital output modules, page 4/24

SIPLUS SM 531 analog modules

Overview

- 8-channel analog input modules
- Optionally with extremely short conversion times
- For the connection of analog sensors without additional amplifiers
- Even solves more complex automation tasks

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1531-7NF10-7AB0 AI 8xU/I HS	**6AG1531-7KF00-7AB0** AI 8xU/I/RTD/TC ST
Based on	**6ES7531-7NF10-0AB0**	**6ES7531-7KF00-0AB0**
Ambient conditions		
Operating temperature		
• horizontal installation, min.	-40 °C; = Tmin; startup @ -25 °C	-25 °C; = Tmin
• horizontal installation, max.	70 °C; = Tmax; > +60 °C max. 4x ±20 mA or 4x ±10 V permissible	70 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin; startup @ -25 °C	-25 °C; = Tmin
• vertical installation, max.	40 °C; = Tmax	50 °C; = Tmax
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
• Resistance		
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS SM 531 analog input modules (extended temperature range and medial exposure) 8 analog inputs, ±10 V, ±5 V, 1 ... 5 V or 0/4 ... 20 mA, ±20 mA, 16 bit + sign; incl. infeed element, shield clamp, shield terminal, labeling strips, U connector, printed front door	**6AG1531-7NF10-7AB0**
8 analog inputs ±10 V, ±5 V, ±2.5 V, ±1 V, ±500 mV, ±250 mV, ±80 mV, ±50 mV, 1 ... 5 V, 0/4 ... 20 mA, ±20 mA, thermocouples type B, E, J, K, N, R, S, T, resistance thermometers Ni 100, Ni 1000, LG-Ni 1000, Pt 100, Pt 1000, Pt 250, Pt 500, resistors 0...150/300/600/6000 Ohm, 16 bit	**6AG1531-7KF00-7AB0**
Accessories	See SIMATIC S7-1500 SM 531 analog input modules, catalog ST 70 · 2013, page 4/22

Overview

- 4 and 8-channel analog output modules
- Optionally with extremely short conversion times
- For connecting analog actuators without additional amplifiers
- Even solves more complex automation tasks

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1532-5HD00-7AB0 AQ 4xU/I ST	**6AG1532-5HF00-7AB0** AQ 8xU/I HS
Based on	**6ES7532-5HD00-0AB0**	**6ES7532-5HF00-0AB0**
Ambient conditions		
Operating temperature		
• horizontal installation, min.	-25 °C; = Tmin	-40 °C; = Tmin; startup @ -25 °C
• horizontal installation, max.	70 °C; = Tmax; > +60 °C max. 4x ±10 V permissible	70 °C; = Tmax; > +60 °C max. 4x ±10 V permissible
• vertical installation, min.	-25 °C; = Tmin	-40 °C; = Tmin; startup @ -25 °C
• vertical installation, max.	40 °C; = Tmax	40 °C; = Tmax
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• Relative humidity		
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
• Resistance		
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS SM 532 analog output modules	
(extended temperature range and medial exposure)	
4 analog outputs, ±10 V, 1 ... 5 V, 0 ... 10 V or ±20 mA, 0/4 ... 20 mA, 16 bit	**6AG1532-5HD00-7AB0**
8 analog outputs, ±10 V, 1 ... 5 V, 0 ... 10 V or ±20 mA, 0/4 ... 20 mA, 16 bit; incl. infeed element, shield clamp, shield terminal, labeling strips, U connector, printed front door	**6AG1532-5HF00-7AB0**

	Article No.
Accessories	See SIMATIC S7-1500 SM 532 analog output modules, catalog ST 70 · 2013, page 4/25

TM PosInput 2 position detection module

Overview

- 2-channel counting and position detection module with RS422 interface
- Extensive parameterization options for optimum task-specific adaptation
- Reduces load on controller due to preprocessing on the module
- Position detection with incremental and SSI absolute encoders
- Speed and time period measuring
- Storage and comparison functions
- Connection of encoders with RS422 signals or 5V-TTL signals

Technical specifications

	6ES7551-1AB00-0AB0 TM PosInput 2
General information	
Product function	
• I&M data	Yes; I&M 0
Engineering with	
• STEP 7 TIA Portal can be configured/integrated as of version	V12 SP1 / V12 SP1
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -
• PROFINET as of GSD version/GSD revision	V2.3 / -
Installation type/mounting	
Type of fitting, rail mounting	Yes; S7-1500 mounting rail
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	19.2 V
• permissible range, upper limit (DC)	28.8 V
• Reverse polarity protection	Yes
Input current	
Current consumption, max.	75 mA; without load
Encoder supply	
Number of outputs	4; One 5 V and 24 V encoder supply per channel
5 V encoder supply	
• 5 V	Yes; 5.2 V +/-2%
• Short-circuit protection	Yes
• Output current, max.	300 mA; Per channel
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes
• Output current, max.	300 mA; Per channel
Power	
Power available from the backplane bus	1.3 W
Power losses	
Power loss, typ.	5.5 W

	6ES7551-1AB00-0AB0 TM PosInput 2
Digital inputs	
Number of digital inputs	4; 2 per channel
Digital inputs, configurable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
• Gate start/stop	Yes; only for pulse and incremental encoders
• Capture	Yes
• Synchronization	Yes; only for pulse and incremental encoders
• Freely usable digital input	Yes
Input voltage	
• Type of input voltage	DC
• Rated value, DC	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	+11 to +30 V
• Permissible voltage at input, min.	-30 V
• Permissible voltage at input, max.	30 V
Input current	
• for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage)	
• for standard inputs	
- Parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
- at "0" to "1", min.	6 µs; for parameterization "none"
- at "1" to "0", min.	6 µs; for parameterization "none"
• for counter/technological functions	
- Parameterizable	Yes
Cable length	
• Cable length, shielded, max.	1 000 m
• Cable length unshielded, max.	600 m

Technical specifications (continued)

	6ES7551-1AB00-0AB0 TM PosInput 2
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	4; 2 per channel
Digital outputs, configurable	Yes
Short-circuit protection	Yes; electronic/thermal
• Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	L+ (-33 V)
Controlling a digital input	Yes
Digital output functions, parameterizable	
• Switching tripped by comparison values	Yes
• Freely usable digital output	Yes
Switching capacity of the outputs	
• with resistive load, max.	0.5 A; Per digital output
• on lamp load, max.	5 W
Load resistance range	
• lower limit	48 Ω
• upper limit	12 kΩ
Output voltage	
• Type of output voltage	DC
• for signal "1", min.	23.2 V; L+ (-0.8 V)
Output current	
• for signal "1" rated value	0.5 A; Per digital output
• for signal "1" permissible range, max.	0.6 A; Per digital output
• for signal "1" minimum load current	2 mA
• for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
• "0" to "1", max.	50 µs
• "1" to "0", max.	50 µs
Switching frequency	
• with resistive load, max.	10 kHz
• with inductive load, max.	0.5 Hz; Acc. to IEC 947-5-1, DC-13; observe derating curve
• on lamp load, max.	10 Hz
Aggregate current of the outputs	
• Max. current per module	2 A
Cable length	
• Cable length, shielded, max.	1 000 m
• Cable length unshielded, max.	600 m
Encoder	
Encoder signals, incremental encoder (symmetrical)	
• Input voltage	RS 422
• Input frequency, max.	1 MHz
• Counting frequency, max.	4 MHz; with quadruple evaluation
• Signal filter, can be parameterized	Yes
• Cable length, shielded, max.	32 m; at 1 MHz
• Incremental encoder with A/B tracks, 90° out of phase	Yes
• Incremental encoder with A/B tracks, 90° out of phase and zero track	Yes
• Pulse encoder	Yes
• Pulse encoder with direction	Yes
• Pulse encoder with one impulse signal per count direction	Yes

	6ES7551-1AB00-0AB0 TM PosInput 2
Encoder signals, incremental encoder (asymmetrical)	
• Input voltage	5 V TTL (push-pull encoders only)
• Input frequency, max.	1 MHz
• Counting frequency, max.	4 MHz; with quadruple evaluation
• Signal filter, can be parameterized	Yes
• Incremental encoder with A/B tracks, 90° out of phase	Yes
• Incremental encoder with A/B tracks, 90° out of phase and zero track	Yes
• Pulse encoder	Yes
• Pulse encoder with direction	Yes
• Pulse encoder with one impulse signal per count direction	Yes
Encoder signals, absolute encoder (SSI)	
• Input signal	to RS-422
• Message frame length, parameterizable	10 ... 40 bit
• Clock frequency, max.	2 MHz; 125 kHz, 250 kHz, 500 kHz, 1 MHz, 1.5 MHz or 2 MHz
• Binary code	Yes
• Gray code	Yes
• Cable length, shielded, max.	320 m; Cable length, RS-422 SSI absolute encoders, Siemens type 6FX2001-5, 24 V supply: 125 kHz, 320 meters shielded, max.; 250 kHz, 160 meters shielded, max.; 500 kHz, 60 meters shielded, max.; 1 MHz, 20 meters shielded, max. 1.5 MHz, 10 meters shielded, max.; 2 MHz, 8 meters shielded, max.
• Parity bit, parameterizable	Yes
• Monoflop time	16, 32, 48, 64 µs & automatic
• Multiturn	Yes
• Singleturn	Yes
Interface types	
• RS422	Yes
• TTL 5 V	Yes; push-pull encoders only
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
Filtering and processing time (TCI), min.	130 µs; only for pulse and incremental encoders
Bus cycle time (TDP), min.	250 µs
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire break	Yes
• Short circuit	Yes
• A/B transition error at incremental encoder	Yes
• Frame error at SSI encoder	Yes
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• MAINT LED	Yes; yellow LED
• Monitoring the supply voltage	Yes; Green LED
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; Red LED

TM PosInput 2 position detection module

Technical specifications (continued)

	6ES7551-1AB00-0AB0 TM PosInput 2
Integrated Functions	
Number of counters	2
Counter frequency (counter) max.	4 MHz; with quadruple evaluation
Counting functions	
• Can be used with TO High_Speed_Counter	Yes; only for pulse and incremental encoders
• Continuous counting	Yes
• Counter response can be parameterized	Yes
• Hardware gate via digital input	Yes
• Software gate	Yes
• Event-controlled stop	Yes
• Synchronization via digital input	Yes
• Counting range, parameterizable	Yes
• Comparator	
- Number of comparators	2; Per channel
- Direction dependency	Yes
- Can be changed from user program	Yes
Position detection	
• Incremental acquisition	Yes
• Absolute acquisition	Yes
• Suitable for S7-1500 Motion Control	Yes
Measuring functions	
• Measuring time, parameterizable	Yes
• Dyn. measuring time adjustment	Yes
• Number of thresholds, parameterizable	2
• Measuring range	
- Frequency measurement, min.	0.04 Hz
- Frequency measurement, max.	4 MHz
- Period measurement, min.	0.25 µs
- Period measurement, max.	25 s
• Accuracy	
- Frequency measurement	100 ppm; depending on measuring interval and signal evaluation
- Speed measurement	100 ppm; depending on measuring interval and signal evaluation
- Cycle duration measurement	100 ppm; depending on measuring interval and signal evaluation
Galvanic isolation	
Electrical isolation channels	
• between the channels	No
• between the channels and the backplane bus	Yes
• between the channels and the load voltage L+	No
Permissible potential difference	
between different circuits	75 V DC/60 V AC (base isolation)
Isolation	
Isolation checked with	707 V DC (type test)
Ambient conditions	
Operating temperature	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C; Please note derating for inductive loads
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C; Please note derating for inductive loads
Decentralized operation	
to SIMATIC S7-1500	Yes
To standard PROFINET controller	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	325 g

Ordering data

	Article No.
Counter and positioning module TM PosInput 2 With 2 channels, max. 1 MHz counting frequency; for SSI encoders and incremental encoders with RS422 or 5V TTL interface	**6ES7551-1AB00-0AB0**
Accessories	
Front connectors For 35 mm modules; including four potential bridges, cable ties and individual labeling strips, 40-pin	
• Screw terminals	**6ES7592-1AM00-0XB0**
• Push-in	**6ES7592-1BM00-0XB0**
DIN A4 labeling sheets 10 sheets with 10 labeling strips each for I/O modules; perforated, Al grey	**6ES7592-2AX00-0AA0**
U connector 5 units; spare part	**6ES7590-0AA00-0AA0**
Universal front door for I/O modules 5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part	**6ES7528-0AA00-7AA0**
Shielding set I/O Infeed element, shield clamp, and shield terminal; 5 units, spare part	**6ES7590-5CA00-0AA0**
Shield terminal element 10 units; spare part	**6ES7590-5BA00-0AA0**

Overview

- 2-channel high-speed counter module
- With comprehensive parameterization options for an optimum adaptation to the task and reduction of control load
- Speed and time period measuring
- Storage and comparison functions
- Connection of 24 V encoders

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

	Article No.
SIPLUS TM Count 2x24V counter module (extended temperature range and medial exposure) With 2 channels, max. 200 kHz; for 24 V encoder	**6AG1550-1AA00-7AB0**
Accessories	See SIMATIC S7-1500, TM Count 2x24V counter module, catalog ST 70 · 2013, page 4/30

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1550-1AA00-7AB0 TM Count 2x24V
Based on	**6ES7550-1AA00-0AB0**
Ambient conditions	
Operating temperature	
• horizontal installation, min.	-40 °C; = Tmin; startup @ -25 °C
• horizontal installation, max.	70 °C; = Tmax; note derating for inductive loads; > +60 °C total current of the encoder supply max. 0.5 A, total current of the outputs max. 1 A
• vertical installation, min.	-40 °C; = Tmin; startup @ -25 °C
• vertical installation, max.	40 °C; Please note derating for inductive loads
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
• Resistance	
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!
Decentralized operation	
to SIMATIC S7-1500	Yes
To standard PROFINET controller	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	250 g

CP 1542-5

Overview

DP-M	DP-S	FMS	PG/OP	S7/S5	
●	●		●		

The CP 1542-5 communications processor expands the SIMATIC S7-1500 controller with an additional PROFIBUS connection for communication with lower-level PROFIBUS devices in bandwidths from 9.6 kbps to 12 Mbit/s. The processor also allows the implementation of separate PROFIBUS lines; in other words, the control of multiple field devices via several PROFIBUS segments. The CP 1542-5 handles all communication tasks, thus reducing the CPU load.

- PROFIBUS DP master or DP slave with electrical interface for connecting the SIMATIC S7-1500 to PROFIBUS at up to 12 Mbit/s (including 45.45 Kbit/s)

Communication services:

- PROFIBUS DP
- PG/OP communication
- Time synchronization
- Simple programming and configuration over PROFIBUS
- Cross-network PG communication using S7 routing
- Module replacement without a PG

Technical specifications

Article No.	6GK7542-5FX00-0XE0
Product-type designation	**CP 1542-5**
Transmission rate	
Transmission rate at interface 1	
• in accordance with PROFIBUS	9 600 … 12 000 000 bit/s
Interfaces	
Number of electrical connections at interface 1	
• in accordance with PROFIBUS	1
Design of electrical connection at interface 1	
• in accordance with PROFIBUS	9-pin Sub-D socket (RS485)
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage 1	
• from backplane bus	15 V
Relative symmetrical tolerance at 15 V with DC	3 %
Current consumption from backplane bus at 15 V with DC typical	0.1 A
Resistive loss	1.5 W
Permitted ambient conditions	
Ambient temperature	
• for vertical installation during operating phase	0 … 40 °C
• for horizontal installation during operating phase	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
• Comment	-
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20

Article No.	6GK7542-5FX00-0XE0
Product-type designation	**CP 1542-5**
Design, dimensions and weight	
Module format	Compact module S7-1500 single width
Width	0.035 m
Height	0.142 m
Depth	0.129 m
Net weight	0.27 kg
Type of mounting S7-1500 rail mounting	Yes
Product properties, functions, components general	
Number of modules	
• per CPU maximum	8
• note	depending on CPU type
Performance data	
Performance data PROFIBUS DP	
Service as DP master DPV1	Yes
Number of DP slaves on DP master usable	32
Amount of data	
• of the address area of the inputs as DP master overall	2 048 byte
• of the address area of the outputs as DP master overall	2 048 byte
• of the address area of the inputs per DP slave	244 byte
• of the address area of the outputs per DP slave	244 byte
• of the address area of the diagnostic data per DP slave	-
Service as DP slave	
• DPV0	Yes
• DPV1	Yes

Technical specifications (continued)

Article No.	6GK7542-5FX00-0XE0
Product-type designation	**CP 1542-5**
Amount of data	
• of the address area of the inputs as DP slave overall	240 byte
• of the address area of the outputs as DP slave overall	240 byte
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	16
• with PG connections maximum	-
• with PG/OP connections maximum	-
• note	depending on the system upper limit
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	
• without DP maximum	-
• with DP maximum	-
Product functions management, configuration	
Configuration software required	TIA-Portal / STEP 7 V12 SP1 Professional
Product functions Diagnosis	
Product function	Yes
• note	yes, via S7-1500 CPU
Product functions Time	
Product function pass on time synchronization	Yes

Ordering data

	Article No.
CP 1542-5 communications processor	
Communication module for electrical connection of SIMATIC S7-1500 to PROFIBUS as DP master or DP slave; PG/OP communication, time synchronization, diagnostics	**6GK7542-5FX00-0XE0**
Accessories	
PROFIBUS FastConnect connection plug RS485	
With 90° cable outlet; insulation displacement technology, max. transmission rate 12 Mbit/s	
• without programming device interface	**6ES7972-0BA52-0XA0**
• with programming device interface	**6ES7972-0BB52-0XA0**
PROFIBUS FC Standard Cable	
2-core bus cable, shielded, special design for fast mounting, delivery unit: max. 1000 m, minimum order 20 m, sold by the meter	**6XV1830-0EH10**
PROFIBUS FastConnect Stripping Tool	
Stripping tool for fast stripping of the PROFIBUS FastConnect bus cable	**6GK1905-6AA00**
PROFIBUS bus terminal 12M	
Bus terminal for connection of PROFIBUS stations for up to 12 Mbit/s with plug-in cable	**6GK1500-0AA10**

Note:

For ordering data for software and accessories, see catalog IK PI.

CM 1542-1

Overview

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

G_IK10_XX_10583

Communication module for connecting a SIMATIC S7-1500 to PROFINET networks as PROFINET IO controller.

The CM 1542-1 supports the following communication services:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE, FETCH/WRITE)
- PROFINET communication
- IT communication;
  web diagnose by means of access to the Web server of the S7-1500 system

Technical specifications

Article No.	6GK7542-1AX00-0XE0
Product-type designation	**CM 1542-1**
Transmission rate	
Transfer rate	
• at the interface 1	10 … 100 Mbit/s
• at the interface 2	-
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with Industrial Ethernet	2
• at interface 2 in accordance with Industrial Ethernet	-
Design of electrical connection	
• at interface 1 in accordance with Industrial Ethernet	RJ45 port
• at interface 2 in accordance with Industrial Ethernet	-
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage 1 from backplane bus	15 V
Relative symmetrical tolerance at 15 V with DC	3 %
Current consumption from backplane bus at 15 V with DC typical	0.22 A
Resistive loss	3.3 W
Permitted ambient conditions	
Ambient temperature	
• for vertical installation during operating phase	0 … 40 °C
• for horizontal installation during operating phase	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
• Comment	-
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-1500 single width
Width	35 mm
Height	142 mm
Depth	129 mm
Net weight	0.4 kg
Type of mounting S7-1500 rail mounting	Yes
Product properties, functions, components general	
Number of modules	
• per CPU maximum	8
• note	depending on CPU type
Performance data	
Performance data open communication	
number of possible connections for open communication via SEND/RECEIVE modules	
• maximum	-
• comment	-
Data volume	
• as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	-
• as user data per ISO connection for open communication by means of SEND/RECEIVE blocks maximum	-
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	-
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	-
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	-

Technical specifications (continued)

Article No.	6GK7542-1AX00-0XE0
Product-type designation	**CM 1542-1**
Number of possible connections for open communication via T-modules	
• maximum	64
• comment	depending on the system upper limit
Data volume as user data per ISO on TCP connection for open communication by means of T blocks maximum	65 536 byte
Number of Multicast stations	16
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	64
• with PG connections maximum	-
• with PG/OP connections maximum	-
• note	depending on the system upper limit
Performance data multi-protocol mode	
Number of active connections with multiprotocol mode	64
Performance data IT functions	
Number of possible connections	
• as client by means of FTP maximum	-
• as server	
- by means of FTP maximum	-
- by means of HTTP maximum	-
• as e-mail client maximum	-
Number of e-mails with 1024 characters of e-mail client maximum	-
Amount of data as useful data for e-mail maximum	-
Storage capacity of the user memory	
• as flash memory file system	-
• as RAM	-
• additionally buffered as RAM via central backup battery	-
Number of possible write cycles flash memory cells	-
Performance data PROFINET communication as PN IO-Controller	
Product function PROFINET IO controller	Yes
Number of PN IO-Devices on PROFINET IO-Controller usable total	128
Number of PN IO IRT-Devices on PROFINET IO-Controller usable	64
Number of external PN IO lines with PROFINET per rack	10

Article No.	6GK7542-1AX00-0XE0
Product-type designation	**CM 1542-1**
Data volume	
• as useful data for input variables as PROFINET IO controller maximum	8 Kibyte
• as useful data for output variables with PROFINET IO controller maximum	8 Kibyte
• as useful data for input variables per PN IO device with PROFINET IO controller maximum	1 433 byte
• as useful data for output variables per PN IO device with PROFINET IO controller maximum	1 433 byte
• as user data for input variable per PN IO device per submodule as PROFINET IO controller maximum	256 byte
• as user data for output variables per PN IO device per submodule as PROFINET IO controller maximum	256 byte
Performance data PROFINET communication as PN IO-Device	
Product function PROFINET IO device	-
Amount of data	
• as useful data for input variables as PROFINET IO device maximum	-
• as useful data for input variables as PROFINET IO device maximum	-
• as useful data for input variables for each sub-module under PROFINET IO device	-
• as useful data for input variables for each sub-module under PROFINET IO device	-
• as useful data for the consistency area for each sub-module	-
Number of submodules per PROFINET IO-Device	-
Product functions management, configuration	
Product function MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software required	TIA-Portal / STEP 7 Professional V13
Identification & maintenance function	
• I&M0 - device-specific information	Yes
• I&M1 – higher level designation/location designation	Yes
Product functions Diagnosis	
Product function Web-based diagnostics	Yes

Technical specifications (continued)

Article No.	6GK7542-1AX00-0XE0
Product-type designation	**CM 1542-1**
Product functions switch	
Product feature switch	Yes
Product function	
• switch-managed	No
• for IRT PROFINET IO switch	Yes
• Configuration with STEP 7	Yes
Product functions Redundancy	
Product function	
• Ring redundancy	Yes
• Redundancy manager	Yes
• Media Redundancy Protocol (MRP)	Yes
Product functions Security	
Design of the firewall	-
Product function with VPN connection	-
Type of encryption algorithms with VPN connection	-
Type of authentication procedure with VPN connection	-
Type of hashing algorithms with VPN connection	-
Number of possible connections for VPN connection	-
Product function	
• password protection for Web applications	-
• ACL - IP-based	-
• ACL - IP-based for PLC/routing	-
• switchoff of non-required services	Yes
• blocking of communication via physical ports	No
• log file for unauthorized access	No
Product functions Time	
Product function	
• SICLOCK support	Yes
• pass on time synchronization	Yes
Protocol is supported NTP	Yes

Ordering data

	Article No.
CM 1542-1 communication module for connection of SIMATIC S7-1500 to PROFINET IO via TCP/IP, ISO, UDP S7 communication, IP broadcast/multicast, SNMPV1, DHHCP, time synchronization via NTP; 21 x RJ45 interface with 10/100 Mbit/s;	**6GK7542-1AX00-0XE0**
Accessories	
IE FC RJ45 Plug 4 x 2 RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbit/s) with a sturdy 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	**6GK1901-1BB11-2AA0**
• 1 pack = 10 units	**6GK1901-1BB11-2AB0**
• 1 pack = 50 units	**6GK1901-1BB11-2AE0**
IE FC TP Standard Cable GP 4 x 2 8-core, shielded TP installation cable for connection to IE FC RJ45 Modular Outlet for universal applications; with UL approval; sold by the meter; max. quantity 1000 m, minimum order 20 m	
• AWG22, for connection to IE FC RJ45 Modular Outlet	**6XV1870-2E**
• AWG24, for connection to IE FC RJ45 Plug 4 x 2	**6XV1878-2A**
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	**6GK5204-2BB10-2AA3**
Industrial Ethernet Switch SCALANCE X308-2 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 max. 750 m	**6GK5308-2FL00-2AA3**

Overview

- Modules for serial communication connections, scaled according to interface types, protocols, and performance
- 4 versions with different physical transmission characteristics:
  - RS 232C, max. 19.2 Kbit/s
  - RS 232C, max.115.2 Kbit/s
  - RS 422/RS 485, max. 19.2 Kbit/s
  - RS 422/RS 485, max. 115.2 Kbit/s
- Protocols supported
  - Freeport: User-parameterizable telegram format for universal communication
  - 3964(R) for improved transmission reliability
  - Modbus RTU Master
  - Modbus RTU Slave
  - USS, implemented through instructions

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1540-1AD00-7AA0 CM PtP RS232 BA	**6AG1541-1AD00-7AB0** CM PtP RS232 HF	**6AG1540-1AB00-7AA0** CM PtP RS422/485 BA	**6AG1541-1AB00-7AB0** CM PtP RS422/485 HF
Based on	**6ES7540-1AD00-0AA0**	**6ES7541-1AD00-0AB0**	**6ES7540-1AB00-0AA0**	**6ES7541-1AB00-0AB0**
Ambient conditions				
Operating temperature				
• horizontal installation, min.	-40 °C; = Tmin; startup @ -25 °C	-40 °C; = Tmin; startup @ -25 °C	-40 °C; = Tmin; startup @ -25 °C	-40 °C; = Tmin; startup @ -25 °C
• horizontal installation, max.	70 °C	70 °C	70 °C	70 °C
• vertical installation, min.	-40 °C; = Tmin; startup @ -25 °C	-40 °C; = Tmin; startup @ -25 °C	-40 °C; = Tmin; startup @ -25 °C	-40 °C; = Tmin; startup @ -25 °C
• vertical installation, max.	40 °C	40 °C	40 °C	40 °C
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• Relative humidity				
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Technical specifications (continued)

	6AG1540-1AD00-7AA0 CM PtP RS232 BA	6AG1541-1AD00-7AB0 CM PtP RS232 HF	6AG1540-1AB00-7AA0 CM PtP RS422/485 BA	6AG1541-1AB00-7AB0 CM PtP RS422/485 HF
Based on	**6ES7540-1AD00-0AA0**	**6ES7541-1AD00-0AB0**	**6ES7540-1AB00-0AA0**	**6ES7541-1AB00-0AB0**
Extended ambient conditions				
• Resistance				
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS CM PtP RS232 BA communication module (extended temperature range and medial exposure) Basic communication module with 1 interface RS232, Freeport, 3964(R) and USS protocols, 9-pin sub D connector, max. 19.2 Kbit/s	**6AG1540-1AD00-7AA0**
SIPLUS CM PtP RS232 HF communication module (extended temperature range and medial exposure) High Feature communication module with 1 interface RS232, Freeport, 3964(R), USS and Modbus RTU protocols, 9-pin sub D connector, max. 115.2 Kbit/s	**6AG1541-1AD00-7AB0**
SIPLUS CM PtP RS422/485 BA communication module (extended temperature range and medial exposure) Basic communication module with 1 interface RS422/485, Freeport, 3964(R) and USS protocols, 15-pin sub D socket, max. 19.2 Kbit/s	**6AG1540-1AB00-7AA0**
SIPLUS CM PtP RS422/485 HF communication module (extended temperature range and medial exposure) High Feature communication module with 1 interface RS422/485, Freeport, 3964(R), USS and Modbus RTU protocols, 15-pin sub D socket, max. 115.2 Kbit/s	**6AG1541-1AB00-7AB0**
Accessories	See SIMATIC S7-1500, CM PtP communication module, catalog ST 70 · 2013, page 4/33

Overview

DP-M	DP-S	FMS	PG/OP	S7/S5	
●	●		●	●	

The CM 1542-5 communication module expands the SIMATIC S7-1500 controller with an additional PROFIBUS connection for communication with lower-level PROFIBUS devices in bandwidths from 9.6 kbps to 12 Mbps. The module also allows the implementation of separate PROFIBUS lines; in other words, the control of multiple field devices via several PROFIBUS segments. The CM 1542-5 handles all communication tasks, thus reducing the CPU load.

Apart from classic PROFIBUS communication; the CM 1542-5 is also suitable for S7 communication. This makes it possible to establish communication between the S7-1500 controller and other devices, for example those from the SIMATIC S7-300/400 range.

- PROFIBUS DP master or DP slave with electrical interface for connecting the SIMATIC S7-1500 to PROFIBUS at up to 12 Mbit/s (including 45.45 Kbit/s)
- Communication services:
  - PROFIBUS DP
  - PG/OP communication
  - S7 communication
- Time synchronization
- Simple programming and configuration over PROFIBUS
- Cross-network PG communication using S7 routing
- Module replacement without a PG
- Data record routing (PROFIBUS DP)
- Adding or modifying distributed I/O during operation

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

	Article No.
SIPLUS CM 1542-5 communication module (extended temperature range and medial exposure) Communication module for electrical connection of SIMATIC S7-1500 to PROFIBUS as a DP master or DP slave	**6AG1542-5DX00-7XE0**
Accessories	See SIMATIC S7-1500, CM 1542-5 communication module, catalog ST 70 · 2013, page 4/35

Front connectors

Overview

- Uniform, 40-pin front connector, suitable for SIMATIC S7-1500 I/O modules
- Versions for 25 mm wide or 35 mm wide modules
- With screw-type or push-in terminals
- Front connector for 35 mm modules to be ordered separately; front connector for 25 mm modules included in scope of supply of modules
- Connectable core cross-sections: 0.25 mm^2 to 1.5 mm^2 (AWG 24 to 16)

Ordering data

	Article No.
Front connectors	
For 35 mm modules; including four potential bridges, cable ties and individual labeling strips, 40-pin	
• Screw terminals	**6ES7592-1AM00-0XB0**
• Push-in	**6ES7592-1BM00-0XB0**
For 25 mm modules; including cable ties and individual labeling strips; push-in, 40-pin; Spare part	**6ES7592-1BM00-0XA0**
Potential bridges for front connectors	**6ES7592-3AA00-0AA0**
20 units; spare part	

Overview

- System power supplies for the SIMATIC S7-1500
- For conversion of AC or DC line voltages to the operating voltages required for the internal electronics
- 25 or 60 W output power
- Can be used for S7-1500 or ET 200MP
- Configuration via STEP 7 V12

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1505-0KA00-7AB0	**6AG1505-0RA00-7AB0**	**6AG1507-0RA00-7AB0**
	PS 25W 24VDC	PS 60W 24/48/60V DC	PS 60W 120/230V AC/DC
Based on	**6ES7505-0KA00-0AB0**	**6ES7505-0RA00-0AB0**	**6ES7507-0RA00-0AB0**
Ambient conditions			
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)		
• Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
• Resistance			
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		
Climatic and mechanical conditions for storage and transport			
Climatic conditions for storage and transport			
• Temperature			
- Min.		-40 °C	
- max.		70 °C	
Mechanical and climatic conditions during operation			
Climatic conditions in operation			
• Temperature			
- Min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
- max.	70 °C; = Tmax; for vertical mounting position Tmax = +40 °C	70 °C; = Tmax; > +60 °C max. power input 30 W; for vertical mounting position Tmax = +40 °C	70 °C; = Tmax; for vertical mounting position Tmax = +40 °C

Ordering data

	Article No.
SIPLUS system power supply	
(extended temperature range and medial exposure)	
For supplying the backplane bus of the S7-1500	
24 V DC input voltage, power 25 W	**6AG1505-0KA00-7AB0**
24/48/60 V DC input voltage, power 60 W	**6AG1505-0RA00-7AB0**
120/230 V AC input voltage, power 60 W	**6AG1507-0RA00-7AB0**
Accessories	See SIMATIC S7-1500, system power supplies, catalog ST 70 · 2013, page 4/49

SIPLUS load power supplies

Application

The design and functionality of the SIMATIC PM 1507 single-phase load power supply (PM = power module) with automatic range selection of the input voltage are an optimal match to the SIMATIC S7-1500 PLC. It supplies the S7-1500 system components such as CPU, system power supply (PS), I/O circuits of the input and output modules and, if necessary, the sensors and actuators with 24 V DC.

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

	Article No.
SIPLUS S7-1500 PM 1507	
(extended temperature range and medial exposure)	
Input 120/230 V AC, output 24 V DC, 3 A	**6AG1332-4BA00-7AA0**
Input 120/230 V AC, output 24 V DC, 8 A	**6AG1333-4BA00-7AA0**

SIMATIC S7-300

5

Brochures

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

www.siemens.com/simatic/printmaterial

Technology CPUs

Overview CPU 315T-3 PN/DP

- SIMATIC CPU with integral Technology/Motion Control functionality
- With full standard CPU 315-2 PN/DP functionality (except for CBA)
- For cross-industry automation tasks in series machine, special machine and plant construction
- Ideal for synchronized motion, such as coupling to a virtual/real master, gear synchronization, cam disk, path interpolation, or print mark compensation
- 3D path interpolation with different kinematics
- Position and pressure-regulated hydraulic axes
- Used as central controller in production lines with central and distributed I/O
- With integrated I/O for high-speed technology functions (e.g. camming, reference point acquisition)
- PROFIBUS DP (DRIVE) interface for isochronous connection of drive components
- PROFINET interface with 2-port switch
- PROFINET I/O controller for operating distributed I/O on PROFINET
- One common S7 user program for control and motion control tasks (no additional programming language necessary for motion control)
- "S7 technology" option package required (version V4.2 SP3 and higher)

SIMATIC Micro Memory Card (8 MB) required for operation of the CPU.

Overview CPU 317T-3 PN/DP

- SIMATIC CPU with integral Technology/Motion Control functionality
- With full standard CPU 317-2 PN/DP functionality (except for CBA)
- For cross-industry automation tasks in series machine, special machine and plant construction
- Ideal for synchronized motion, such as coupling to a virtual/real master, gear synchronization, cam disk, path interpolation, or print mark compensation
- 3D path interpolation with different kinematics
- Position and pressure-regulated hydraulic axes
- Used as central controller in production lines with central and distributed I/O
- With integrated I/O for high-speed technology functions (e.g. camming, reference point acquisition)
- PROFIBUS DP (DRIVE) interface for isochronous connection of drive components
- PROFINET interface with 2-port switch
- PROFINET I/O controller for operating distributed I/O on PROFINET
- One common S7 user program for control and motion control tasks (no additional programming language necessary for motion control)
- "S7 Technology" option package required (version V4.2 SP3 and higher)

SIMATIC Micro Memory Card (8 MB) required for operation of the CPU.

Overview CPU 317TF-3 PN/DP

- Fail-safe SIMATIC CPU 317TF-3 PN/DP with integral Technology/Motion Control functionality
- Spare-part-compatible successor to the CPU 317TF-2 DP (Article No. 6ES7317-6TF14-0AB0)
- With full functionality of the standard CPU 317-2 PN/DP and CPU 317F-2 PN/DP (except for CBA)
- For cross-industry automation tasks in series machine, special machine and plant construction
- Ideal for synchronized motion, such as coupling to a virtual/real master, gear synchronization, cam disk, path interpolation, or print mark compensation
- 3D path interpolation with different kinematics
- Position and pressure-regulated hydraulic axes
- Used as central controller in production lines with central and distributed I/O
- With integrated I/O for high-speed technology functions (e.g. camming, reference point acquisition)
- PROFIBUS DP (DRIVE) interface for isochronous connection of drive components
- PROFINET interface with 2-port switch
- PROFINET I/O controller for operating distributed I/O on PROFINET
- One common S7 user program for control and motion control tasks (no additional programming language necessary for motion control)
- "S7-Technology" option package required
- "S7 Distributed Safety" option package required (version V4.2 SP3 and higher)

SIMATIC Micro Memory Card (8 MB) required for operation of the CPU.

5

Technical specifications

	6ES7315-7TJ10-0AB0	6ES7317-7TK10-0AB0	6ES7317-7UL10-0AB0
General information			
Engineering with			
• Programming package			STEP 7 V5.5 SP2 or higher; S7-Technology option package V4.2 SP3 or higher, Distributed Safety V5.4 SP5 or higher, S7-F Configuration Pack V5.5 SP10 or higher
Supply voltage			
24 V DC	Yes	Yes	Yes
Power losses			
Power loss, typ.	7.5 W	7.5 W	8.5 W
Memory			
Work memory			
• integrated	384 kbyte	1 024 kbyte	1 536 kbyte
• Size of retentive memory for retentive data blocks	128 kbyte	256 kbyte	256 kbyte
Load memory			
• pluggable (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times			
for bit operations, typ.	0.05 µs	0.025 µs	0.025 µs
for word operations, typ.	0.09 µs	0.03 µs	0.03 µs
for fixed point arithmetic, typ.	0.12 µs	0.04 µs	0.04 µs
for floating point arithmetic, typ.	0.45 µs	0.16 µs	0.16 µs
Counters, timers and their retentivity			
S7 counter			
• Number	256	512	512
IEC counter			
• present	Yes	Yes	Yes
S7 times			
• Number	256	512	512
IEC timer			
• present	Yes	Yes	Yes

Technical specifications (continued)

	6ES7315-7TJ10-0AB0	6ES7317-7TK10-0AB0	6ES7317-7UL10-0AB0
Data areas and their retentivity			
Flag			
• Number, max.	2 048 byte	4 096 byte	4 096 byte
Address area			
I/O address area			
• Inputs	2 048 byte	8 192 byte	8 192 byte
• Outputs	2 048 byte	8 192 byte	8 192 byte
Process image			
• Inputs, adjustable	2 048 byte	8 192 byte	8 192 byte
• Outputs, adjustable	2 048 byte	8 192 byte	8 192 byte
Time of day			
Clock			
• Hardware clock (real-time clock)	Yes	Yes	Yes
Operating hours counter			
• Number	1	4	4
1st interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
Functionality			
• MPI	Yes	Yes	Yes
• DP master	Yes	Yes	Yes
• DP slave	Yes	Yes	Yes
• Point-to-point connection	No	No	No
DP master			
• Number of DP slaves, max.	124	124	124
2nd interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
Functionality			
• MPI	No	No	No
• DP master	Yes; DP(DRIVE)-Master	Yes; DP(DRIVE)-Master	Yes; DP(DRIVE)-Master
• DP slave	No	No	No
DP master			
• Number of DP slaves, max.	64	64	64
3rd interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet RJ45	Ethernet RJ45	Ethernet RJ45
Number of ports	2	2	2
Functionality			
• MPI	No	No	No
• DP master	No	No	No
• DP slave	No	No	No
• PROFINET IO Controller	Yes; Also simultaneously with IO-Device functionality	Yes; Also simultaneously with IO-Device functionality	Yes; Also simultaneously with IO-Device functionality
• PROFINET IO Device	Yes; Also simultaneously with IO Controller functionality	Yes; Also simultaneously with IO Controller functionality	Yes; Also simultaneously with IO Controller functionality
PROFINET IO Controller			
• Max. number of connectable IO devices for RT	128	128	128
• Number of IO Devices with IRT and the option "high performance", max.	64	64	64
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via PROFIBUS DP or PROFINET interface
Communication functions			
PG/OP communication	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes

Technical specifications (continued)

	6ES7315-7TJ10-0AB0	6ES7317-7TK10-0AB0	6ES7317-7UL10-0AB0
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
Open IE communication			
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8	16	16
• ISO-on-TCP (RFC1006)	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8	16	16
• UDP	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8	16	16
Web server			
• supported	Yes	Yes	Yes
Number of connections			
• overall	16	32	32
Ambient conditions			
Operating temperature			
• Min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
Configuration			
programming			
• Programming language			
- 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
Know-how protection			
• User program protection/password protection	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions			
Width	120 mm	120 mm	120 mm
Height	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm
Weights			
Weight, approx.	640 g	640 g	640 g

Technology CPUs

Ordering data	Article No.
CPU 315T-3 PN/DP 384 KB main memory, 24 V DC power supply, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface, Ethernet/PROFINET interface with 2-port switch; with technology/motion control functions; MMC required	**6ES7315-7TJ10-0AB0**
CPU 317T-3 PN/DP 1024 KB main memory, 24 V DC power supply, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface, Ethernet/PROFINET interface with 2-port switch; with technology/motion control functions; MMC required	**6ES7317-7TK10-0AB0**
CPU 317TF-3 PN/DP 1.5 MB main memory, 24 V DC power supply, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface, Ethernet/PROFINET interface with 2-port switch; with technology/motion control functions; MMC required	**6ES7317-7UL10-0AB0**
S7-Technology V4.2 V4.2 SP3 and higher can be used for CPU 315T-3 PN/DP and CPU 317TF-3 PN/DP Task: Option package for configuring and programming technology tasks with the SIMATIC S7 CPU 31xT and SIMATIC S7 CPU 317TF Requirement: STEP 7 V5.5 SP5 and higher Delivery form: incl. up-to-date Service Pack; on DVD; incl. documentation for CPU 31xT-2 DP, CPU 317TF-2 DP (also on DVD)	
Floating License	**6ES7864-1CC42-0YA5**
Floating License for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7864-1CC42-0XH5**
Upgrade to V4.2	**6ES7864-1CC42-0YE5**
Trial License	**6ES7864-1CC42-0YA7**

Ordering data	Article No.
S7 Distributed Safety V5.4 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 V5.3 SP3 and higher	
Floating License for 1 user	**6ES7833-1FC02-0YA5**
Floating License for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FC02-0YH5**
S7 Distributed Safety upgrade from V5.x to V5.4; Floating License for 1 user	**6ES7833-1FC02-0YE5**
SIMATIC Micro Memory Card	
8 MB	**6ES7953-8LP31-0AA0**
MPI cable For connection of SIMATIC S7 and PG via MPI; 5 m in length	**6ES7901-0BF00-0AA0**
Front connectors	
40-pin, with screw contacts	
• 1 unit	**6ES7392-1AM00-0AA0**
• 100 units	**6ES7392-1AM00-1AB0**
40-pin, with spring-loaded contacts	
• 1 unit	**6ES7392-1BM01-0AA0**
• 100 units	**6ES7392-1BM01-1AB0**
Slot number plates	**6ES7912-0AA00-0AA0**
S7-300 manual Design, CPU data, module data, instruction list	
German	**6ES7398-8FA10-8AA0**
English	**6ES7398-8FA10-8BA0**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: 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	**6ES7998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7998-8XC01-8YE2**

[1] For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

Ordering data	Article No.
Power supply connector	**6ES7391-1AA00-0AA0**
10 units, spare part	
Labeling strips	**6ES7392-2XX00-0AA0**
10 units, spare part	
Label cover	**6ES7392-2XY00-0AA0**
10 units, spare part	
Labeling sheets for machine inscription	
For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units	
petrol	**6ES7392-2AX10-0AA0**
light-beige	**6ES7392-2BX10-0AA0**
yellow	**6ES7392-2CX10-0AA0**
red	**6ES7392-2DX10-0AA0**
USB A2 PC adapter	**6GK1571-0BA00-0AA0**
For connecting a PG/PC or Notebook to PROFIBUS or MPI; USB cable included in scope of delivery	
PROFIBUS bus components	
PROFIBUS DP bus connector RS 485	
• with 90° cable outlet, max. transfer rate 12 Mbit/s	
- without PG interface	**6ES7972-0BA12-0XA0**
- with PG interface	**6ES7972-0BB12-0XA0**
• with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbit/s	
- without PG interface, 1 unit	**6ES7972-0BA52-0XA0**
- without PG interface, 100 units	**6ES7972-0BA52-0XB0**
- with PG interface, 1 unit	**6ES7972-0BB52-0XA0**
- with PG interface, 100 units	**6ES7972-0BB52-0XB0**
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	**6GK1500-0EA02**
PROFIBUS Fast Connect bus cable	**6XV1830-0EH10**
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	**6ES7972-0AA02-0XA0**
Transmission rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	

	Article No.
PROFINET bus components	
IE FC TP Standard Cable GP 2x2	**6XV1840-2AH10**
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	
FO Standard Cable GP (50/125)	**6XV1873-2A**
Standard cable, splittable, UL approval, sold by the meter	
SCALANCE X204-2 Industrial Ethernet Switch	**6GK5204-2BB10-2AA3**
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	
Compact Switch Module CSM 377	**6GK7377-1AA00-0AA0**
Unmanaged Switch for connecting a SIMATIC S7-300, ET200 M and up to three other stations 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	
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 180	
180° cable outlet	
1 unit	**6GK1901-1BB10-2AA0**
10 units	**6GK1901-1BB10-2AB0**
50 units	**6GK1901-1BB10-2AE0**
PROFIBUS/PROFINET bus components	See catalogs IK PI, CA 01
For establishing MPI/PROFIBUS/PROFINET communication	

5

SIPLUS S7-300 SM 321 digital input modules

Overview

- Digital inputs
- For connection of switches and 2-wire proximity switches (BEROs)

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

Based on	6AG1321-1BH02-2AA0 6ES7321-1BH02-0AA0	6AG1321-1BL00-2AA0 6ES7321-1BL00-0AA0	6AG1321-1CH20-2AA0 6ES7321-1CH20-0AA0	6AG1321-1FF01-2AA0 6ES7321-1FF01-0AA0	6AG1321-1FF10-7AA0 6ES7321-1FF10-0AA0
Ambient conditions					
Operating temperature					
• Min.	-40 °C; = Tmin	-40 °C; = Tmin	-25 °C	-40 °C; = Tmin	-25 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions					
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
• Relative humidity					
- with condensation, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)				
• Resistance					
- to biologically active substances/ conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!				
- to chemically active substances/ conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!				
- to mechanically active substances/ conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!				

Technical specifications (continued)

	6AG1321-1FH00-7AA0	6AG1321-7BH01-2AB0	6AG1321-7TH00-4AB0
Based on	**6ES7321-1FH00-0AA0**	**6ES7321-7BH01-0AB0**	**6ES7321-7TH00-0AB0**
Ambient conditions			
Operating temperature			
• Min.	-40 °C; = Tmin	-25 °C	0 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• at cold restart, minimum			0 °C
• Relative humidity			
- with condensation, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	
- With condensation, tested in accordance with IEC 60068-2-38, maximum			100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
• Resistance			
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		

Ordering data

	Article No.
SIPLUS S7-300 SM 321 digital input modules	
Extended temperature range and exposure to media	
16 inputs, 24 V DC	**6AG1321-1BH02-2AA0**
32 inputs, 24 V DC	**6AG1321-1BL00-2AA0**
16 inputs, 48 to 120 V DC	**6AG1321-1CH20-2AA0**
8 inputs, 120/230 V AC	**6AG1321-1FF01-2AA0**
8 inputs, 120/230 V AC, single root	**6AG1321-1FF10-7AA0**
16 inputs, 120/230 V AC	**6AG1321-1FH00-7AA0**
16 inputs, 24 V DC, diagnostics-capable	**6AG1321-7BH01-2AB0**
Exposure to media	
16 inputs, NAMUR, redundant design possible	**6AG1321-7TH00-4AB0**
Conforms to EN 50155	
16 inputs, 24 V DC	**6AG1321-1BH02-2AA0**
32 inputs, 24 V DC	**6AG1321-1BL00-2AA0**
16 inputs, 48 to 120 V DC	**6AG1321-1CH20-2AA0**
8 inputs, 120/230 V AC	**6AG1321-1FF01-2AA0**
16 inputs, 24 V DC, diagnostics-capable	**6AG1321-7BH01-2AB0**
Accessories	See SIMATIC S7-300 digital input modules, catalog ST 70 · 2013, page 5/54

SIPLUS S7-300 SM 322 digital output modules

Overview

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

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

5

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1322-1BF01-2XB0	6AG1322-8BF00-2AB0	6AG1322-1BH01-2AA0	6AG1322-1BL00-2AA0
Based on	**6ES7322-1BF01-0XB0**	**6ES7322-8BF00-0AB0**	**6ES7322-1BH01-0AA0**	**6ES7322-1BL00-0AA0**
Ambient conditions				
Operating temperature				
• Min.	-25 °C	-25 °C; = Tmin	-25 °C	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL use	70 °C; = Tmax; 60 °C @ UL/cUL use	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
• Relative humidity				
- with condensation, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
• Resistance				
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

	6AG1322-1CF00-7AA0	6AG1322-1HF10-2AA0	6AG1322-5HF00-4AB0	6AG1322-1FF01-7AA0
Based on	**6ES7322-1CF00-0AA0**	**6ES7322-1HF10-0AA0**	**6ES7322-5HF00-0AB0**	**6ES7322-1FF01-0AA0**
Ambient conditions				
Operating temperature				
• Min.	-25 °C	-25 °C	0 °C; = Tmin	-40 °C
• max.	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	60 °C	60 °C; = Tmax	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)			
• Relative humidity				
- with condensation, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
• Resistance				
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			

Technical specifications (continued)

	6AG1322-1CF00-7AA0	6AG1322-1HF10-2AA0	6AG1322-5HF00-4AB0	6AG1322-1FF01-7AA0
Based on	**6ES7322-1CF00-0AA0**	**6ES7322-1HF10-0AA0**	**6ES7322-5HF00-0AB0**	**6ES7322-1FF01-0AA0**
Extended ambient conditions				
• Resistance				
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

	6AG1322-5FF00-4AB0	6AG1322-1FH00-7AA0	6AG1322-1HH01-2AA0
Based on	**6ES7322-5FF00-0AB0**	**6ES7322-1FH00-0AA0**	**6ES7322-1HH01-0AA0**
Ambient conditions			
Operating temperature			
• Min.	0 °C; = Tmin	-40 °C; = Tmin	-40 °C
• max.	60 °C; = Tmax	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m)
• Relative humidity			
- with condensation, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
• Resistance			
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		

Ordering data

	Article No.
SIPLUS S7-300 SM 322 digital output modules	
Extended temperature range and exposure to media	
8 outputs, 24 V DC, 2 A	**6AG1322-1BF01-2XB0**
16 outputs, 24 V DC, 0.5 A	**6AG1322-1BH01-2AA0**
32 outputs, 24 V DC, 0.5 A	**6AG1322-1BL00-2AA0**
8 outputs, 48 to 125 V DC, 1.5 A	**6AG1322-1CF00-7AA0**
8 outputs, 120/230 V AC, 1 A	**6AG1322-1FF01-7AA0**
16 outputs, 120/230 V AC, 1 A	**6AG1322-1FH00-7AA0**
8 outputs, relay contacts, 5 A	**6AG1322-1HF10-2AA0**
16 outputs, relay contacts, 8 A	**6AG1322-1HH01-2AA0**
8 outputs, 24 V DC, 0.5 A, diagnostics-capable	**6AG1322-8BF00-2AB0**
Exposure to media	
8 outputs, 120/230 V AC, 2 A	**6AG1322-5FF00-4AB0**
8 outputs, relay contacts, 5 A, with RC filter, overvoltage protection	**6AG1322-5HF00-4AB0**
Conforms to EN 50155	
16 outputs, 24 V DC, 0.5 A, high speed	**6AG1322-1BH01-2AA0**
32 outputs, 24 V DC, 0.5 A	**6AG1322-1BL00-2AA0**
8 outputs, relay contacts, 5 A	**6AG1322-1HF10-2AA0**
16 outputs, relay contacts, 8 A	**6AG1322-1HH01-2AA0**
8 outputs, 24 V DC, 0.5 A, diagnostics-capable	**6AG1322-8BF00-2AB0**
Accessories	See SIMATIC S7-300 digital output modules, catalog ST 70 · 2013, page 5/60

SIPLUS S7-300 SM 331 analog input modules

Overview

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

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

5

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1331-1KF02-7AB0	**6AG1331-7KB02-2AB0**	**6AG1331-7KF02-2AB0**
Based on	**6ES7331-1KF02-0AB0**	**6ES7331-7KB02-0AB0**	**6ES7331-7KF02-0AB0**
Ambient conditions			
Operating temperature			
• Min.	-25 °C	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)		
• Relative humidity			
- with condensation, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
• Resistance			
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		

Technical specifications (continued)

Based on	6AG1331-7NF00-2AB0 6ES7331-7NF00-0AB0	6AG1331-7NF10-2AB0 6ES7331-7NF10-0AB0	6AG1331-7PF01-4AB0 6ES7331-7PF01-0AB0	6AG1331-7PF11-4AB0 6ES7331-7PF11-0AB0
Ambient conditions				
Operating temperature				
• Min.	-25 °C; = Tmin	-25 °C; = Tmin	0 °C; = Tmin	0 °C; = Tmin
• max.	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies	60 °C; = Tmax	60 °C; = Tmax	60 °C; = Tmax
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude		Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• Relative humidity				
- with condensation, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)			
- With condensation, tested in accordance with IEC 60068-2-38, maximum		100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
• Resistance				
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

Ordering data

	Article No.
SIPLUS S7-300 SM 331 analog input modules	
Extended temperature range and exposure to media	
8 inputs, 13-bit resolution	**6AG1331-1KF02-7AB0**
2 inputs, 9/12/14-bit resolution	**6AG1331-7KB02-2AB0**
8 inputs, 9/12/14-bit resolution	**6AG1331-7KF02-2AB0**
8 inputs, enhanced 16-bit resolution	**6AG1331-7NF00-2AB0**
8 inputs, enhanced 16-bit resolution, 4-channel mode	**6AG1331-7NF10-2AB0**

	Article No.
Exposure to media	
8 inputs, for thermal resistors	**6AG1331-7PF01-4AB0**
8 inputs, for thermocouples	**6AG1331-7PF11-4AB0**
Conforms to EN 50155	
8 inputs, 9/12/14-bit resolution	**6AG1331-7KF02-2AB0**
8 inputs, enhanced 16-bit resolution	**6AG1331-7NF00-2AB0**
Accessories	See SIMATIC S7-300 analog input modules, catalog ST 70 · 2013, page 5/76

SIPLUS S7-300 SM 332 analog output modules

Overview

- Analog outputs
- For connection of analog actuators

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

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Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1332-5HD01-7AB0	6AG1332-7ND02-4AB0	6AG1332-5HB01-2AB0	6AG1332-5HF00-2AB0
Based on	**6ES7332-5HD01-0AB0**	**6ES7332-7ND02-0AB0**	**6ES7332-5HB01-0AB0**	**6ES7332-5HF00-0AB0**
Ambient conditions				
Operating temperature				
• Min.	-25 °C; = Tmin	0 °C; = Tmin	-25 °C; = Tmin	-25 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
• Relative humidity				
- with condensation, maximum			100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
• Resistance				
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!			
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!			
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!			

Ordering data

	Article No.
SIPLUS S7-300 SM 332 analog output modules	
Extended temperature range and exposure to media	
2 outputs, 11/12-bit	**6AG1332-5HB01-2AB0**
4 outputs, 11/12-bit	**6AG1332-5HD01-7AB0**
8 outputs, 11/12-bit	**6AG1332-5HF00-2AB0**

	Article No.
Exposure to media	
4 outputs, 16-bit; only medial exposure	**6AG1332-7ND02-4AB0**
Conforms to EN 50155	
2 outputs, 11/12-bit	**6AG1332-5HB01-2AB0**
Accessories	See SIMATIC S7-300 analog output modules, catalog ST 70 · 2013, page 5/79

Overview

- Digital inputs for signals from the Ex field
- For the connection of intrinsically safe digital equipment from the Ex field
- 4 DI NAMUR
- 4 digital inputs in 4 channel modules (single-channel isolation)
- Connectable encoder in accordance with DIN EN 60947-5-6 and NAMUR, optionally with wired or unwired mechanical contacts
- Programmable diagnostics and diagnostic interrupt

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1321-7RD00-4AB0
Based on	**6ES7321-7RD00-0AB0**
Ambient conditions	
Operating temperature	
• Min.	0 °C; = Tmin
• max.	60 °C; = Tmax
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• Relative humidity	
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
• Resistance	
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS S7-300 Ex digital input module	
Exposure to media	
4 inputs, isolated, NAMUR	**6AG1321-7RD00-4AB0**
Accessories	See SIMATIC S7-300 Ex digital input modules, catalog ST 70 · 2013, page 5/101

SIPLUS S7-300 Ex analog input modules

Overview

- Analog inputs for signals from the Ex field
- For the connection of intrinsically safe analog equipment from the Ex field
- 4 analog inputs in 4 channel groups (single-channel isolation)
- Measurement type and range can be selected for each channel
- Programmable diagnostics and diagnostic interrupt
- Programmable threshold alarm
- HART-compatible inputs (6AG1331-7RD00-2AB0 only)

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

5

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1331-7RD00-2AB0	6AG1331-7SF00-4AB0
Based on	**6ES7331-7RD00-0AB0**	**6ES7331-7SF00-0AB0**
Ambient conditions		
Operating temperature		
• Min.	-25 °C; = Tmin	0 °C; = Tmin
• max.	60 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use, 70 °C only 4 wire	60 °C; = Tmax
Extended ambient conditions		
• Relative to ambient temperature-atmospheric pressure-installation altitude		Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
• Relative humidity		
- with condensation, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	
• Resistance		
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	

Ordering data

	Article No.
SIPLUS S7-300 Ex analog input modules	
Extended temperature range and exposure to media	
4 inputs, isolated, 0/4 to 20 mA, 15 bit	**6AG1331-7RD00-2AB0**
Exposure to media	
8/4 inputs, isolated, for thermocouples and Pt100, Pt200, Ni100; medial exposure only	**6AG1331-7SF00-4AB0**
Accessories	See SIMATIC S7-300 Ex analog input modules, catalog ST 70 · 2013, page 5/106

Overview

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

- Connection of SIMATIC S7-300/SINUMERIK 840D powerline to Industrial Ethernet
  - Multi-protocol operation with TCP and UDP transport protocol
  - Adjustable keep-alive function
- Two separate interfaces (integrated network separation):
  - Gigabit interface with one RJ45 port with 10/100/1 000 Mbit/s, full/half-duplex with auto-sensing capability
  - PROFINET interface with two RJ45 ports with 10/100 Mbit/s full/half-duplex with auto-sensing and auto-crossover functionality via integrated 2-port switch
- Communication services via both interfaces:
  - Open communication (TCP/IP and UDP): Multicast with UDP, including routing between both interfaces
  - PG/OP communication:
    Cross-network by means of S7 routing
  - S7 communication (client, server, multiplexing) including routing between both interfaces
  - IT communication:
    HTTP communication supports access to process data via own web pages;
    e-mail client function, sending of e-mails directly from user program;
    FTP communication supports program-controlled FTP client communication;
    access to data blocks through FTP server
- Communication services via PROFINET interfaces:
  - PROFINET IO controller and IO device with real-time properties (RT and IRT)[1)]
  - PROFINET CBA
  - IP address assignment via DHCP, simple PC tool or via program block (e.g. for HMI)
  - Configuration with STEP 7
- Media redundancy (MRP);
  within an Ethernet network with ring topology, the CP supports the media redundancy procedure MRP (V2.2 or higher).
- Access protection by means of configurable IP access list
- Module replacement without programming device;
  all information is stored on the C-PLUG (also file system for IT functions)
- Extensive diagnostic functions for all modules in the rack
- IT communication
  - Web function
  - E-mail function
  - FTP
- Integration into network management systems through the support of SNMP V1 MIB-II

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS S7-300 CP 343-1 Advanced	
Article No.	**6AG1343-1GX31-4XE0**
BasedOn Article No.	**6GK7343-1GX31-0XE0**
Ambient temperature range	0 ... +60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies, except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

For technical documentation on SIPLUS, see:

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

1) Possible combinations in parallel mode:
- IO controller with IRT and IO device with RT
- IO controller with RT and IO device using IRT

SIPLUS CP 343-1 Advanced

Ordering data

	Article No.
SIPLUS S7-300 CP 343-1 Advanced communications processor for connecting the SIMATIC S7-300 to Industrial Ethernet, PROFINET IO-Controller and IO-Device with RT and IRT, MRP, PROFINET CBA, TCP/IP and UDP, S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE with or without RFC 1006, diagnostics extensions, multicast, Web server, HTML diagnostics, FTP server, FTP client, e-mail client, CPU clock set via SIMATIC procedure and NTP, access control via IP access List, SNMP, DHCP, initialization over LAN 10/100 Mbit/s; with electronic manual on DVD; C-PLUG included	
Exposure to media	**6AG1343-1GX31-4XE0**

	Article No.
Accessories	
C-PLUG Swap medium for simple replacement of devices in the event of a fault; for storing configuration or engineering and application data; can be used for SIMATIC NET products with C-PLUG slot, -40 ... +70 °C, medial exposure	**6AG1900-0AB00-7AA0**
IE FC RJ45 Plug 180 2 x 2 RJ45 plug connector for Industrial Ethernet 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 -40 ... +70 °C, medial exposure	**6AG1901-1BB10-7AA0**
Additional accessories	See SIMATIC CP 343-1 Advanced communications processor, catalog ST 70 · 2013, page 5/183

SIMATIC S7-400

6

Brochures

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

www.siemens.com/simatic/printmaterial

SIPLUS S7-400 CPU 414H

Overview

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

- Usable in high-availability systems such as the S7-400H
- Usable with F runtime license as F-capable CPU in S7-400F/FH safety-related systems
- With integral PROFIBUS DP master interface
- Features 2 slots for sync modules

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1414-5HM06-7AB0 CPU 414-5H PN/DP
Based on	**6ES7414-5HM06-0AB0**
Ambient conditions	
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m). For "F-Systems" applications max. +2000 m above sea level permissible
• Relative humidity	
- with condensation, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
• Resistance	
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

	6AG1414-5HM06-7AB0 CPU 414-5H PN/DP
Based on	**6ES7414-5HM06-0AB0**
Mechanical and climatic conditions during operation	
Climatic conditions in operation	
• Temperature	
- Min.	-25 °C
- max.	70 °C; For "F-Systems" applications max. +60 °C permissible

Ordering data

	Article No.
SIPLUS S7-400 CPU 414-5H	
CPU for S7-400H and S7-400F/FH with main memory 4 MB (2 MB code and 2 MB data); 5 interfaces: 1x MPI/DP, DP, PN each and 2 slots for sync modules	
Extended temperature range and exposure to media	**6AG1414-5HM06-7AB0**
Accessories	
Memory Card RAM	
Exposure to media	
• 2 MB	**6AG1952-1AL00-4AA0**
Extended temperature range and exposure to media	
• 4 MB	**6AG1952-1AM00-7AA0**
• 8 MB	**6AG1952-1AP00-7AA0**
• 16 MB	**6AG1952-1AS00-7AA0**
• 64 MB	**6AG1952-1AY00-7AA0**
FEPROM memory card	
Exposure to media	
• 32 MB	**6AG1952-1KT00-4AA0**
RS 485 bus connector with 90° cable outlet	
Max. transfer rate 12 Mbit/s	
Extended temperature range and exposure to media	
• Without PG interface	**6AG1972-0BA12-2XA0**
• With PG interface	**6AG1972-0BB12-2XA0**
RS 485 bus connector with angled cable outlet	
Max. transmission rate 12 Mbit/s	
Extended temperature range and exposure to media	
• Without PG interface	**6AG1972-0BA42-7XA0**
• With PG interface	**6AG1972-0BB42-7XA0**
RS 485 bus connector with axial cable outlet	
For SIPLUS OP, for connection to PPI, MPI, PROFIBUS	
Extended temperature range and exposure to media	**6AG1500-0EA02-2AA0**
RS 485 repeater for PROFIBUS	
Transfer rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	
Extended temperature range and exposure to media	**6AG1972-0AA02-7XA0**
Further accessories	see SIMATIC S7-400 CPU 414-4H, catalog ST 70 · 2013, page 6/39.

SIPLUS S7-400 CPU 416H

Overview

- CPU for SIMATIC S7-400H and S7-400F/FH
- Usable in high-availability systems such as the S7-400H
- Usable with F runtime license as F-capable CPU in S7-400F/FH safety-related systems
- With integrated PROFIBUS DP master and combined MPI/PROFIBUS DP master interface
- With integrated PROFINET interface (2-port switch)
- Features 2 slots for sync modules

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1416-5HS06-7AB0 CPU 416-5H PN/DP
Based on	**6ES7416-5HS06-0AB0**
Ambient conditions	
Extended ambient conditions	
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m). For "F-Systems" applications max. +2000 m above sea level permissible
• Relative humidity	
- with condensation, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
• Resistance	
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!
Mechanical and climatic conditions during operation	
Climatic conditions in operation	
• Temperature	
- Min.	-25 °C
- max.	70 °C; For "F-Systems" applications max. +60 °C permissible

Ordering data

	Article No.
SIPLUS S7-400 CPU 416-5H	**6AG1416-5HS06-7AB0**
(medial exposure)	
CPU for S7-400H and S7-400F/FH with main memory 16 MB (6 MB code and 10 MB data); 5 interfaces: 1x MPI/DP, DP, PN each and 2 slots for sync modules	
Accessories	
Memory card RAM	
Exposure to media	
• 2 MB	**6AG1952-1AL00-4AA0**
Extended temperature range and exposure to media	
• 4 MB	**6AG1952-1AM00-7AA0**
• 8 MB	**6AG1952-1AP00-7AA0**
• 16 MB	**6AG1952-1AS00-7AA0**
• 64 MB	**6AG1952-1AY00-7AA0**
FEPROM memory card	
Exposure to media	
• 32 MB	**6AG1952-1KT00-4AA0**
RS 485 bus connector with 90° cable outlet	
Max. transmission rate 12 Mbit/s	
Extended temperature range and exposure to media	
• Without PG interface	**6AG1972-0BA12-2XA0**
• With PG interface	**6AG1972-0BB12-2XA0**
RS 485 bus connector with angled cable outlet	
Max. transmission rate 12 Mbit/s	
Extended temperature range and exposure to media	
• Without PG interface	**6AG1972-0BA42-7XA0**
• With PG interface	**6AG1972-0BB42-7XA0**
RS 485 bus connector with axial cable outlet	
For SIPLUS OP, for connection to PPI, MPI, PROFIBUS	
Extended temperature range and exposure to media	**6AG1500-0EA02-2AA0**
RS 485 repeater for PROFIBUS	
Transfer rate up to 12 Mbit/s; 24 V DC; IP20 enclosure	
Extended temperature range and exposure to media	**6AG1972-0AA02-7XA0**
Further accessories	see SIMATIC S7-400 CPU 416H, catalog ST 70 · 2013, page 6/39.

Overview

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

Communication processor for connecting a SIMATIC S7-400/S7-400H to Industrial Ethernet networks.

The CP supports:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE)

The communications processor can be used in SIMATIC H systems and for fail-safe applications (PROFIsafe) in connection with an S7-400 F-CPU. The CP 443-1 RNA (**R**edundant **N**etwork **A**ccess) [1] offers the option of using the PRP procedure (**P**arallel **R**edundancy **P**rotocol in accordance with IEC 62439-3) to connect an S7-400 or S7-400H to parallel, separate networks where high availability is required.

The PRP functionality can be deactivated so that standard Industrial Ethernet communication is also possible with the CP.

The PRP redundancy procedure is based on double transmission of message frames over two separate networks (LAN A, LAN B). In the event of a fault in one of the two networks, transmission of the message frame from the second network is ensured without delay. A reconfiguration time (switchover of the communication paths) for the network, such as is required with other redundancy procedures, is thus not necessary.

[1] At Siemens Industry, RNA stands for hardware and software to implement redundancy solutions. RNA contains the PRP V1 protocol in accordance with the IEC 62439-3 standard (Parallel Redundancy Protocol) as well as the HSR protocol in accordance with IEC 62439-3 (High-availability Seamless Redundancy Protocol).

Technical specifications

Article No.	**6GK7443-1RX00-0XE0**
Product-type designation	**CP 443-1 RNA**
Transmission rate	
Transfer rate	
• at the interface 1	10 000 000 … 100 000 000 bit/s
• at the interface 2	- … 100 000 000 bit/s
Interfaces	
Number of electrical connections	
• at interface 1 in accordance with Industrial Ethernet	1
• at interface 2 in accordance with Industrial Ethernet	2
Design of electrical connection	
• at interface 1 in accordance with Industrial Ethernet	RJ45 port
• at interface 2 in accordance with Industrial Ethernet	RJ45 port
Supply voltage, current consumption, power loss	
Type of voltage of supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Relative symmetrical tolerance at 5 V with DC	5 %
Consumed current from backplane bus at 5 V for DC Typical	1.8 A
Resistive loss	7.25 W
Permitted ambient conditions	
Ambient temperature	
• during operating	0 … 60 °C
• during storage	-40 … +70 °C
• during transport	-40 … +70 °C
• Comment	-
Relative humidity at 25 °C without condensation during operating maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-400 single width
Width	0.025 m
Height	0.29 m
Depth	0.21 m
Net weight	0.7 kg
Product properties, functions, components general	
Number of modules	
• per CPU maximum	14
• note	-

CP 443-1 RNA

Technical specifications (continued)

Article No.	6GK7443-1RX00-0XE0
Product-type designation	**CP 443-1 RNA**
Performance data	
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	64
Data volume	
• as user data per ISO connection for open communication by means of SEND/RECEIVE blocks maximum	8 192 byte
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 192 byte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 192 byte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 048 byte
Number of possible connections for open communication by means of T blocks maximum	64
Data volume as user data per ISO on TCP connection for open communication by means of T blocks maximum	1 452 byte
Number of Multicast stations	-
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	128
• with PG connections maximum	2
• with PG/OP connections maximum	-
• note	when using several CPUs
Performance data multi-protocol mode	
Number of active connections with multiprotocol mode	128
Product functions management, configuration	
Product function MIB support	Yes
Protocol is supported SNMP v1	Yes
Configuration software required	STEP 7 V5.5 SP2 + HSP 1097 or higher
Product functions Diagnosis	
Product function Web-based diagnostics	Yes
Product functions Redundancy	
Product function Parallel Redundancy Protocol (PRP)	Yes
Product functions Security	
Product function	
• ACL - IP-based	Yes
• ACL - IP-based for PLC/routing	Yes
• switchoff of non-required services	Yes
• blocking of communication via physical ports	Yes
Product functions Time	
Product function	
• SICLOCK support	Yes
• pass on time synchronization	Yes
Protocol is supported NTP	Yes

Ordering data

	Article No.
CP 443-1 RNA communication processor For connecting the SIMATIC S7-400/S7-400H CPU to Industrial Ethernet	**6GK7443-1RX00-0XE0**
Software	
STEP 7 Version 5.5 Target system: SIMATIC S7-300/-400, SIMATIC C7, SIMATIC WinAC Requirements: Windows XP Prof., Windows 7 Professional/Ultimate Delivery package: German, English, French, Spanish, Italian; incl. license key on USB stick, with electronic documentation	
• Floating license on DVD	**6ES7810-4CC10-0YA5**
• Rental license for 50 hours	**6ES7810-4CC10-0YA6**
• Software Update Service on DVD (requirement: current software version)	**6ES7810-4BC01-0YX2**
• Upgrade Floating License 3.x/4.x/5.x to V5.5; on DVD	**6ES7810-4CC10-0YE5**
• Trial License STEP 7 V5.5; on DVD, 14 day trial	**6ES7810-4CC10-0YA7**

[1] For up-to-date information and download availability, see http://www.siemens.com/tia-online-software-delivery

Overview

DP-M	DP-S	FMS	PG/OP	S7/S5	
●			●	●	

- DP-V1 master connection of the S7-400 to PROFIBUS
- For setting up additional PROFIBUS DP lines
- Communication services:
  - PROFIBUS DP
  - PG/OP communication
  - S7 communication
  - S5-compatible communication (SEND/RECEIVE)
- Clock synchronization
- Easy programming and configuration over PROFIBUS
- Cross-network programming device communication through S7 routing
- Can be easily integrated into the SIMATIC S7-400 system
- Module replacement without PG
- SIMATIC H system operation for redundant S7 communication or DP master communication
- Data record routing (PROFIBUS DP)
- Adding or modifying distributed I/O during operation

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS CP 443-5-Extended	
Article No.	**6AG1443-5DX05-4XE0**
Article No. based on	**6GK7443-5DX05-0XE0**
Ambient temperature range	0 ... +60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical specifications of the standard product apply, except for the ambient conditions
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

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

Ordering data

	Article No.
SIPLUS S7-400 CP 443-5 Extended communications processor for connecting SIMATIC S7-400 to PROFIBUS; Extended Version for PROFIBUS DP; with electronic manual, on CD-ROM	
Exposure to media	**6AG1443-5DX05-4XE0**

	Article No.
Accessories	See SIMATIC CP 443-5 Extended, catalog ST 70 · 2013, page 6/111.

SIPLUS S7-400 CP 443-1 Advanced

Overview

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

- Connection of SIMATIC S7-400 to Industrial Ethernet
  - Multi-protocol operation for ISO, TCP/IP, UDP and PROFINET IO protocols
  - Adjustable keep-alive function
- Two separate interfaces (integrated network separation):
  - Gigabit interface with one RJ45 port with 10/100/1 000 Mbit/s, full/half-duplex with auto-sensing capability
  - PROFINET interface with four RJ45 ports with 10/100 Mbit/s, full/half duplex with autosensing and autocrossover functionality via integrated 4-port switch
- Communication services via both interfaces
  - Open communication (ISO, TCP/IP and UDP), multicast with UDP, including routing between both interfaces
  - PG/OP communication: Cross-network by means of S7 routing
  - S7 communication (client, server, multiplexing) including routing between both interfaces
  - IT communication: HTTP communication supports access to process data via own Web pages; e-mail client function, sending of e-mails with authentication directly from user program; FTP communication supports program-controlled FTP client communication; access to data blocks through FTP server
- Communication services via PROFINET interface
  - PROFINET IO controller with real-time properties (RT and IRT)
  - PROFINET CBA
  - IP address assignment via DHCP, simple PC tool or via the user program (e.g. HMI)
  - Support of the prioritized startup of PROFINET IO devices
  - Configuration with STEP 7
- Media redundancy (MRP); the CP supports the media redundancy procedure MRP within an Ethernet network with ring topology.
- Access protection by means of configurable IP access list
- Module replacement without programming device; all information is stored on the C-PLUG (also file system for IT functions)
- Extensive diagnostic functions for all modules in the rack
- Integration into network management systems through the support of SNMP V1 MIB-II
- Operation in the SIMATIC H system for redundant S7-communication
- Operation in fail-safe applications (PROFIsafe) in combination with SIMATIC S7-400 CPU 416F

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS CP 443-1 Advanced	
Article No.	**6AG1443-1GX30-4XE0**
Article number based on	**6GK7443-1GX30-0XE0**
Ambient temperature range	0 ... +60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies, except for the ambient conditions
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

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

Ordering data

	Article No.
SIPLUS S7-400 CP 443-1 Advanced communications processor For the connection of SIMATIC S7-400 to Industrial Ethernet; PROFINET IO Controller with RT and IRT, MRP, PROFINET CBA, TCP/IP, ISO and UDP; S7 communication, open communication (SEND/RECEIVE) with FETCH/WRITE, with and without RFC 1006, diagnostic expansions, multicast, clock synchronization via SIMATIC procedure or NTP, access protection via IP access list, FTP client/server, HTTP server, HTML diagnostics, SNMP, DHCP, e-mail, data storage on C-PLUG; PROFINET interface: 4 x RJ-45 (10/100 Mbit/s) over switch; Gigabit interface: 1 x RJ45 (10/100/1000 Mbit/s)	
Exposure to media	**6AG1443-1GX30-4XE0**

	Article No.
Accessories	
SIPLUS 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	
Extended temperature range and exposure to media	**6AG1204-2BB10-4AA3**
SIPLUS SCALANCE X308-2 Industrial Ethernet Switch 2 x 1000 Mbit/s multimode fiber-optic 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 max. 750 m	
Exposure to media	**6AG1308-2FL00-4AA3**
SIPLUS NET RJ45 Plug 180 180° cable outlet; 1 unit	
Extended temperature range and exposure to media	**6AG1901-1BB10-7AA0**
SIPLUS NET RJ45 Plug 90 90° cable outlet; 1 unit	
Extended temperature range and exposure to media	**6AG1901-1BB20-7AA0**
Further accessories	See SIMATIC CP 443-1 Advanced, catalog ST 70 · 2013, page 6/119.

SIPLUS S7-400 power supplies

Overview

- Power supplies for SIPLUS S7-400
- For conversion of AC or DC line voltages to the 5 V DC and 24 V DC operating voltages required
- 4 A, 10 A and 20 A output currents

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

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

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1405-0KA02-7AA0	6AG1405-0KR02-7AA0	6AG1407-0KA02-7AA0	6AG1407-0KR02-7AA0
Based on	**6ES7405-0KA02-0AA0**	**6ES7405-0KR02-0AA0**	**6ES7407-0KA02-0AA0**	**6ES7407-0KR02-0AA0**
Ambient conditions				
Extended ambient conditions				
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)			
• Relative humidity				
- with condensation, maximum	100 %; Relative humidity, incl. condensation / frost permitted (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning if there is condensation). In buffer mode, use battery box SIPLUS 6AG1971-0AA00-7AA0 for high humidity		
• Resistance				
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation in corrosive atmospheres!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!		
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!		
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!		
Mechanical and climatic conditions during operation				
Climatic conditions in operation				
• Temperature				
- Min.	-25 °C; = Tmin	-25 °C; = Tmin; using the external battery box SIPLUS 6AG1971-0AA00-7AA0 for buffer mode	-25 °C; using the external battery box SIPLUS 6AG1971-0AA00-7AA0 for buffer mode	-25 °C; using the external battery box SIPLUS 6AG1971-0AA00-7AA0 for buffer mode
- max.	70 °C; = Tmax	70 °C; = Tmax; using the external battery box SIPLUS 6AG1971-0AA00-7AA0 for buffer mode	70 °C; using the external battery box SIPLUS 6AG1971-0AA00-7AA0 for buffer mode	70 °C; using the external battery box SIPLUS 6AG1971-0AA00-7AA0 for buffer mode

Technical specifications (continued)

	6AG1405-0KA02-7AA0	6AG1405-0KR02-7AA0	6AG1407-0KA02-7AA0	6AG1407-0KR02-7AA0
Based on	**6ES7405-0KA02-0AA0**	**6ES7405-0KR02-0AA0**	**6ES7407-0KA02-0AA0**	**6ES7407-0KR02-0AA0**
Connection method				
Connecting cables/cross sections	3 x 1.5 mm^2, solid or stranded wire with end sleeve, external diameter 3 to 9 mm	3 x 1.5 mm^2, solid or stranded wire with end sleeve, external diameter 3 to 9 mm	3 x 1.5 mm^2, solid or stranded wire with end sleeve, external diameter 3 to 9 mm	3 x 1.5 mm^2, solid or stranded wire with end sleeve, external diameter 3 to 9 mm

Ordering data

	Article No.
SIPLUS S7-400 PS 405 power supply modules	
In: 24/48/60 V DC - wide range (19.2 ... 72 V DC); Out: 24 V DC/1 A, 5 V DC/10 A	
Extended temperature range and exposure to media	**6AG1405-0KA02-7AA0**
In: 24/48/60 V DC - wide range (19.2 ... 72 V DC); Out: 24 V DC/1 A, 5 V DC/10 A; for redundant use	
Extended temperature range and exposure to media	**6AG1405-0KR02-7AA0**

	Article No.
SIPLUS S7-400 PS 407 power supply modules	
In: 110/230 V DC; 120/230 V AC; Out: 24 V DC/1 A, 5 V DC/10 A	
Extended temperature range and exposure to media	**6AG1407-0KA02-7AA0**
In: 110/230 V DC; 120/230 V AC; Out: 24 V DC/1 A, 5 V DC/10 A; for redundant use	
Extended temperature range and exposure to media	**6AG1407-0KR02-7AA0**
Accessories	See SIMATIC PS 405/407 power supply, catalog ST 70 · 2013, page 6/147.

SIPLUS IM 153-1/153-2

Overview

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

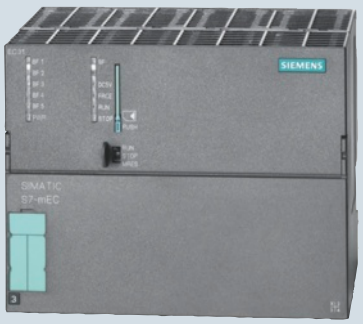
For technical documentation on SIPLUS, see:

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

For further information, see chapter 9, page 9/59.

Embedded Controller

7



Brochures

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

www.siemens.com/simatic/printmaterial

SIMATIC IPC427D bundles

Overview

SIMATIC IPC427D (Microbox PC): The powerful embedded IPC – maintenance-free with versatile configuration

Ready-to-run, complete solutions (software is already installed and preconfigured) for visualization and automation in connection with WinCC RT Advanced and/or WinAC RTX.

- Ultra-compact
- Maintenance-free
- Third generation Intel Core i technology
- Current product versions of the pre-installed software:
  - SIMATIC WinCC RT Advanced
  - SIMATIC WinAC RTX 2010
  - SIMATIC Net V8.x

Technical specifications

	6AG4140-.....-...0
Supply voltage	
Type of supply voltage	24 V DC
Supply voltage	24 V
Processor	
Processor	Intel® Celeron® Processor 827E (1.5MB Cache, 1.40 GHz); Intel® Core™ i3-3217UE Processor (3MB Cache, 1.60 GHz); Intel® Core™ i7-3517UE Processor (4MB Cache, up to 2.80 GHz)
Drives	
Hard disk	2.5" SATA hard disk, at least 250 GB
Memory	
Main memory	1 GB to 8 GB, ECC optional
Interfaces	
PROFIBUS/MPI	Onboard, isolated, max. 12 Mbit/s, CP5611-compatible
USB port	4x USB 3.0 high speed/high current
Free slots	1xPCIe (x4), 1xPCIe (x1)
Connection for keyboard/mouse	USB / USB
serial interface	1 x RS232; 2 x RS232 (optional); CAN (optional)
Video interfaces	
• Graphics interface	1x DisplayPort and 1x DVI-I; 1x VGA via adapter cable (optional)
Supports protocol for PROFINET IO	
• Number of PROFINET interfaces	1; 3 ports (incl. switch)
Industrial Ethernet	
• Industrial Ethernet interface	2 x Fast Ethernet
- 100 Mbps	Yes
- 1000 Mbps	Yes
Monitoring functions	
Temperature	Yes
Watchdog	Yes
Status LEDs	Yes
Degree and class of protection	
IP (at the front)	20

	6AG4140-.....-...0
Standards, approvals, certificates	
Approval	CE, cULus (508), C-Tick
CE mark	Yes
KC approval	Yes
cULus	Yes
EMC	CE, EN 55022A, EN 61000-6-4, EN 61000-6-2
EN 61000-6-2	Yes
Marine approval	
• GL	Yes
• ABS	Yes
• BV	Yes
• DNV	Yes
• LRS	Yes
Ambient conditions	
Operating temperature	
• Ambient temperature in operation	
- during operating phase, min.	0 °C
- during operating phase, max.	55 °C
Operating systems	
Operating system	Windows 7 Ultimate (Multi Language) 32-bit/64-bit, Windows Embedded Standard 7 32-bit/64-bit
Pre-installed operating system	Yes
Software	
SIMATIC Software	Optionally with pre-installed software bundle SIMATIC WinCC RT Advanced / WinAC RTX

Ordering data

SIMATIC IPC427D (Box PC) [1)2)]	Article No. 6AG4140- ■■■■■■-■■■■
Processor and fieldbus:	
• Celeron U827E (1C/1T, 1.4 GHz, 1.5 MB cache); 2 x Gigabit Ethernet (IE/PN)	0
• Celeron U827E (1C/1T, 1.4 GHz, 1.5 MB cache); 2 x Gigabit Ethernet (IE/PN); PROFIBUS DP12	1
• Celeron U827E (1C/1T, 1.4 GHz, 1.5 MB cache); 2 x Gigabit Ethernet (IE/PN); CAN interface	2
• Core i3-3217UE (2C/4T, 1.6 GHz, 3 MB cache); 2 x Gigabit Ethernet (IE/PN)	3
• Core i3-3217UE (2C/4T, 1.6 GHz, 3 MB cache); 2 x Gigabit Ethernet (IE/PN); PROFIBUS DP12	4
• Core i3-3217UE (2C/4T, 1.6 GHz, 3 MB cache); 1 x Gigabit Ethernet (IE/PN); 1 x PROFINET (IRT, 3 ports)	5
• Core i7-3517UE (2C/4T, 1.7 (2.8) GHz, 3 MB cache); 2 x Gigabit Ethernet (IE/PN) (optional ECC only here)	6
• Core i7-3517UE (2C/4T, 1.7 (2.8) GHz, 3 MB cache); 2 x Gigabit Ethernet (IE/PN); PROFIBUS DP12	7
• Core i7-3517UE (2C/4T, 1.7 (2.8) GHz, 3 MB cache); 1 x Gigabit Ethernet (IE/PN); 1 x PROFINET (IRT, 3 ports)	8
Mounting accessories:	
• Without mounting accessories	A
• DIN rail mounting	B
• Wall mounting	D
• Portrait mounting	E
Work memory/NVRAM/ECC:	
• 1 GB	A
• 2 GB	B
• 4 GB	C
• 8 GB	D
• 4 GB with ECC (only with Core i7, 2 x Gigabit Ethernet (IE/PN))	G
• 8 GB with ECC (only with Core i7, 2 x Gigabit Ethernet (IE/PN))	H
• 1 GB and NVRAM	J
• 2 GB and NVRAM	K
• 4 GB and NVRAM	L
• 8 GB and NVRAM	M
• 4 GB with ECC and NVRAM (only with Core i7, 2 x Gigabit Ethernet (IE/PN))	N
• 8 GB with ECC and NVRAM (only with Core i7, 2 x Gigabit Ethernet (IE/PN))	P

SIMATIC IPC427D (Box PC) [1)2)]	Article No. 6AG4140- ■■■■■■-■■■■
Expansions/interface:	
• One RS 232, without PCIe	0
• One RS 232 and one PCIe	1
• One RS 232 and two PCIe	2
• Second RS 232, without PCIe	3
• Second RS 232 and one PCIe	4
• Second RS 232 and second PCIe	5
Operating system:	
• Without operating system	0
• Windows Embedded Standard 7 SP1, English, 32-bit	4
• Windows Embedded Standard 7 SP1, English, 64-bit	5
• Windows 7 Ultimate SP1, 32-bit, MUI (Eng, Ger, Fr, It, Sp)	6
• Windows 7 Ultimate SP1, 64-bit, MUI (Eng, Ger, Fr, It, Sp)	7
Mass storage, externally accessible:	
• Without external mass storage	0
• CFast 2 GB Without operating system	1
• CFast 4 GB (only optionally with operating system if no internal mass storage)	2
• CFast 8 GB (only optionally with operating system if no internal mass storage)	3
• CFast 16 GB (only optionally with operating system if no internal mass storage)	4
Internal mass storage:	
• Without internal mass storage	A
• CFast 2 GB, without software	B
• CFast 4 GB, without software	C
• CFast 8 GB, without software	D
• CFast 16 GB, without software	E
• SSD 50 GB high endurance (SLC)	G
• SSD 80 GB Standard	H
• HDD 250 GB	K
• SSD 160 GB Standard	P

1) "Built to order" – versions with a delivery time of max. 15 working days and with identified repair, if not preferred type.

2) For an up-to-date overview, see the SIMATIC PC online configurator at: www.siemens.com/ipc-configurator

SIMATIC IPC427D bundles

Ordering data

	Article No.
SIMATIC IPC427D (Box PC) [1][2]	**6AG4140-** ■■■■■■ - ■■■■
SIMATIC software preinstalled (bundles, only with Windows Embedded Standard 7):	
• Without SIMATIC software	**A**
• WinAC RTX 2010 [3]	**B**
• WinCC RT Advanced, 128 PT	**C**
• WinCC RT Advanced, 512 PT	**D**
• WinCC RT Advanced, 2048 PT	**E**
• WinCC RT Advanced, 4096 PT	**F**
• WinCC RT Advanced 128 PT, WinAC RTX 2010 [3]	**J**
• WinCC RT Advanced 512 PT, WinAC RTX 2010 [3]	**K**
• WinCC RT Advanced 2048 PT, WinAC RTX 2010 [3]	**L**
• WinCC RT Advanced 4096 PT, WinAC RTX 2010 [3]	**M**
• WinAC RTX F 2010 [3]	**N**
• WinCC RT Advanced 128 PT, WinAC RTX F 2010 [3]	**P**
• WinCC RT Advanced 512 PT, WinAC RTX F 2010 [3]	**Q**
• WinCC RT Advanced 2048 PT, WinAC RTX F 2010 [3]	**R**
• WinCC RT Advanced 4096 PT, WinAC RTX F 2010 [3]	**S**

	Article No.
SIMATIC IPC427D (Box PC) [1][2]	**6AG4140-** ■■■■■■ - ■■■■
Power supply:	
• 24 V DC industrial power supply	**0**
• 24 V DC and TPM (not for China and Russia)	**8**

[1] "Built to order" – versions with a delivery time of max. 15 working days and with identified repair, if not preferred type.

[2] For an up-to-date overview, see the SIMATIC PC online configurator at: www.siemens.com/ipc-configurator

[3] Only with "main memory and NVRAM".

Note:

Bundles with SIMATIC software only with Windows Embedded Standard 7,
main memory and NVRAM (with RTX and RTX F), and CFast mass storage of 4 GB or more / SSD.

Overview

SIMATIC IPC477D: The powerful embedded Panel PC – maintenance-free with versatile configuration

Ready-to-run, complete solutions (software is already installed and preconfigured) for visualization and automation in connection with WinCC RT Advanced and/or WinAC RTX.

- 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 even the harshest mechanical stress and is extremely reliable in operation
- Compact design
- Battery-independent retentive memory onboard
- High investment protection
- Fast integration capability
- Safety requirements up to SIL 3 in accordance with IEC 61508/62061 or EN ISO 13849-1 up to PL e can be implemented with WinAC RTX F

The following front versions are available:

- Built-in versions
  - 12" TFT Touch
  - 15" TFT Touch
  - 19" TFT Touch
  - 22" TFT Touch
  - 15" TFT Touch/Key
- Current product versions of the pre-installed SIMATIC software:
  - SIMATIC WinCC RT Advanced V12
  - SIMATIC WinAC RTX 2010 or SIMATIC WinAC RTX F 2010
  - SIMATIC NET V8.2 (including SIMATIC SOFTNET S7 Basis license)
  - and the combinations of the software packageslisted above

7

Technical specifications

	SIMATIC IPC477D
General features	
Supply voltage [1]	• 24 V DC (-20 % / +20 %) [1] • 100 - 240 V AC (-15 % / +20 %); 50 - 60 Hz
Brief voltage interruption in accordance with NAMUR	• Min. 20 ms (DC) • Min. 20 ms (AC); max. 10 events per hour; min. 1 s recovery time
Power consumption (DC) of devices (without expansions):	
• 12" display	55 W
• 15" display	56 W
• 19" display	65 W
• 22" display	74 W
Additional power consumption of devices with expansions:	
• DVD drive	1 W
• PCIe card	5 W
Processor	• Intel Celeron 827E 1.4 GHz; 1.5 MB SLC or • Intel Core i3-3217UE 1.6 GHz; 3 MB SLC or • Intel Core i7-3517UE 1.7 GHz; 4 MB SLC
Main memory	• SO-DIMM module; 1024 MB DDR3-SDRAM or • SO-DIMM module; 2048 MB DDR3-SDRAM or • SO-DIMM module; 4096 MB DDR3-SDRAM or • SO-DIMM module; 8192 MB DDR3-SDRAM
Buffer memory [2]	512 KB MRAM

	SIMATIC IPC477D
Drive and storage media	
SATA drive	1 slot
Solid-state drive	• 1 x ≥ 50 GB; 2.5" SATA-SSD, high endurance or • 1 x ≥ 80 GB; 2.5" SATA-SSD, standard or • 1 x ≥ 160 GB; 2.5" SATA-SSD, standard
Hard disk drive (HDD)	• 1 x ≥ 250 GB, 2.5"-SATA-HD
CFast card	• 2 GB or • 4 GB or • 8 GB or • 16 GB
DVD drive, RW	1 slot for devices with expansion
Graphics	
Display, resolution	• 12" screen diagonal with LED backlighting, resolution 1280 × 800 pixels, WXGA (Wide XGA) *** bis hier • 15" screen diagonal with LED backlighting, resolution 1280 × 800 pixels, WXGA (Wide XGA) • 19" screen diagonal with LED backlighting, resolution 1366 x 768 pixels • 22" screen diagonal with LED backlighting, resolution 1920 x 1080 pixels

[1] The generation of the supply voltage by the line-side power supply must be realized as safety extra-low voltage with safe electrical isolation, isolated according to IEC 60364 4 41, or as SELV according to IEC/UL/EN/DIN-EN 60950-1.

[2] For devices with retentivity.

SIMATIC IPC477D bundles

Technical specifications (continued)

	SIMATIC IPC477D
Touch controller	Resistive Tyco Elotouch controller ELO CTR-2216SU-AT-CHP-00, touch screen, analog resistive, touch force with test pen of 2 mm diameter: 5 N
Backlighting (MTBF)	LED
Half brightness life time, typical	Min. 50000 h at 50 °C, 50% brightness
Graphics controller	• Intel HD 2000 or • Intel HD 4000
Graphics memory	• 32 … 512 MB shared memory
Resolutions, frequency, colors	• DVI-I: 640 x 480 … 1920 x 1200, 60 Hz • DP display port: 1920 x 1200, 60 Hz
Interfaces	
COM 1 and COM 2	RS 232, max. 115 kbps, 9-pin, sub-D connector
DVI	Connection of VDUs with DVI connection
Display port (DPP)	Connection of VDUs with DPP connection
Keyboard	Connection via USB port
Mouse	Connection via USB port
USB	• Rear of device: 4 x USB 3.0, max. 2 high-current at the same time • Front of device (only with IPC477D with 15", 19" or 22" display): 1 x USB 2.0, high-current
PROFIBUS/MPI	9-pole, 2 rows, electrically isolated, Sub-D socket, compatible with CP 5622
• Transmission rate	9.6 Kbps … 12 Mbps
• Operating modes	DP master: DP-V0, DP-V1 with SOFTNET-DP DP slave: DP-V0, DP-V1 with SOFTNET-DP slave
PROFINET	3 x RJ45 interface, CP 1616 compatible onboard interface based on ERTEC 400 10/100 Mbps, electrically isolated
Ethernet [3]	• 2 x RJ45 connection, Intel 82579LM and Intel 82574L 10/100/1000 Mbps, electrically isolated, teaming-capable [4] or • For PROFINET versions: 1 x Ethernet

	SIMATIC IPC477D
Slot for PCIe expansion cards	Only for device with expansions: 1 x PCIe-x4 expansion card can be used, max. permissible power loss: 5 W
Degree of protection	
Degree of protection	• IP 20 to IEC 60529 (enclosure) • IP 65 (front)
Quality assurance	In accordance with ISO 9001
Electromagnetic compatibility	
Emitted interference S	EN 61000-6-4; CISPR 22 Class A; FCC Class A
Immunity with regard to conducted interference on the supply lines	• ± 2 kV to IEC 61000-4-4; burst • ± 1 kV to IEC 61000-4-5; surge symmetrical • ± 2 kV to IEC 61000-4-5; surge asymmetrical
Noise immunity on signal lines	• ± 2 kV to IEC 61000-4-4; burst, length > 3 m • ± 1 kV to IEC 61000-4-4; burst, length < 3 m • ± 2 kV to IEC 61000-4-5; symmetrical surge, length > 30 m
Immunity to static discharge	• ± 6 kV, contact discharge at the front to IEC 61000-4-2 • ± 4 kV contact discharge at the rear to IEC 61000-4-2 • ± 8 kV air discharge to IEC 61000-4-2
Immunity to high radio frequency interference	• 10 V/m, 80 … 1000 MHz 80 % AM to IEC 61000-4-3 • 1 V/m, 2 … 2.7 GHz • 3 V/m, 2 … 2.7 GHz • 10 V, 10 kHz … 80 MHz to IEC 61000-4-6
Immunity to magnetic fields	• 100 A/m, 50/60 Hz to IEC 61000-4-8
Weight	
• IPC477D, touch device, 12" display	Approx. 3200 g
• IPC477D, touch device, 15" display	Approx. 4920 g
• IPC477D, touch/key device (without expansions), 15" display	Approx. 5750 g
• IPC477D, touch device, 19" display	Approx. 6400 g
• IPC477D, touch device, 22" display	Approx. 7000 g

[3] For unambiguous labeling, the Ethernet ports are numbered on the enclosure. The numbering by the operating system can differ.

[4] Teaming can be set and initiated in the configuration interface. In teaming operation, jumbo frames, e.g. for the camera application, are not supported

Ordering data

SIMATIC IPC477D [1]	Article No. 6AV7240-					-				
Processor and fieldbus:										
• Celeron U827E (1C/1T, 1.4 GHz, 1.5 MB cache); 2 x Gigabit Ethernet (IE/PN)		0								
• Celeron U827E (1C/1T, 1.4 GHz, 1.5 MB cache); 2 x Gigabit Ethernet (IE/PN); PROFIBUS DP12		1								
• Core i3-3217UE (2C/4T, 1.6 GHz, 3 MB cache); 2 x Gigabit Ethernet (IE/PN)		3								
• Core i3-3217UE (2C/4T, 1.6 GHz, 3 MB cache); 2 x Gigabit Ethernet (IE/PN); PROFIBUS DP12		4								
• Core i3-3217UE (2C/4T, 1.6 GHz, 3 MB cache); 1 x Gigabit Ethernet (IE/PN); 1 x PROFINET (IRT, 3 ports)		5								
• Core i7-3517UE (2C/4T, 1.7 (2.8) GHz, 3 MB cache); 2 x Gigabit Ethernet (IE/PN)		6								
• Core i7-3517UE (2C/4T, 1.7 (2.8) GHz, 3 MB cache); 2 x Gigabit Ethernet (IE/PN); PROFIBUS DP12		7								
• Core i7-3517UE (2C/4T, 1.7 (2.8) GHz, 3 MB cache); 1 x Gigabit Ethernet (IE/PN); 1 x PROFINET (IRT, 3 ports)		8								
Operator control unit:										
• 12" Touch (1280 x 800) (caution, restrictions regarding options: HDD, PCI, AC, DVD)			A							
• 15" Touch (1280 x 800) with front USB			B							
• 15" Touch/Key (1280 x 800) with front USB			C							
• 19" Touch (1366 x 768) with front USB			D							
• 22" Touch (1920 x 1080) with front USB			E							
Main memory/NVRAM:										
• 1 GB				A						
• 2 GB				B						
• 4 GB				C						
• 8 GB				D						
• 1 GB and NVRAM				J						
• 2 GB and NVRAM				K						
• 4 GB and NVRAM				L						
• 8 GB and NVRAM				M						
Expansions/interface:										
• 1 x RS 232, without PCIe					0					
• 1 x RS 232 and 1 x PCIe					1					
• Second RS 232, without PCIe					3					
• Second RS 232 and 1 x PCIe					4					

SIMATIC IPC477D [1]	Article No. 6AV7240-					-				
Operating system:										
• Without operating system					0					
• Windows Embedded Standard 7 SP1, English, 32-bit					4					
• Windows Embedded Standard 7 SP1, English, 64-bit					5					
• Windows 7 Ultimate SP1, 32-bit, MUI (Eng, Ger, Fr, It, Sp)					6					
• Windows 7 Ultimate SP1, 64-bit, MUI (Eng, Ger, Fr, It, Sp)					7					
Externally accessible mass storage (without operating system):										
• Without external mass storage							0			
• CFAST 2 GB, without software							1			
• CFAST 4 GB							2			
• CFAST 8 GB							3			
• CFAST 16 GB							4			
• DVD							6			
Internal mass storage:										
• Without internal mass storage								A		
• CFAST 2 GB								B		
• CFAST 4 GB								C		
• CFAST 8 GB								D		
• CFAST 16 GB								E		
• SSD 50 GB High Endurance								G		
• SSD 80 GB Standard								H		
• HDD 250 GB								K		
• DVD								L		
• SSD 50 GB high endurance with DVD								M		
• SSD 80 GB standard with DVD								N		
• SSD 160 GB standard without DVD								P		
• HDD min. 250 GB with DVD								Q		

[1] Built to order versions with a delivery time of max. 15 working days and with identified repair.

SIMATIC IPC477D bundles

Ordering data

SIMATIC IPC477D [1]	Article No. 6AV7240- ■■■■■■ - ■■■■
SIMATIC software preinstalled (bundles):	
• Without SIMATIC software	A
• WinAC RTX 2010 [2]	B
• WinCC RT Advanced 128 PT	C
• WinCC RT Advanced 512 PT	D
• WinCC RT Advanced 2048 PT	E
• WinCC RT Advanced 4096 PT	F
• WinCC RT Advanced 128 PT, WinAC RTX [2]	J
• WinCC RT Advanced 512 PT, WinAC RTX [2]	K
• WinCC RT Advanced 2048 PT, WinAC RTX [2]	L
• WinCC RT Advanced 4096 PT, WinAC RTX [2]	M
• WinAC RTX 2010 F [2]	N
• WinCC RT Advanced 128 PT, WinAC RTX F [2]	P
• WinCC RT Advanced 512 PT, WinAC RTX F [2]	Q
• WinCC RT Advanced 2048 PT, WinAC RTX F [2]	R
• WinCC RT Advanced 4096 PT, WinAC RTX F [2]	S

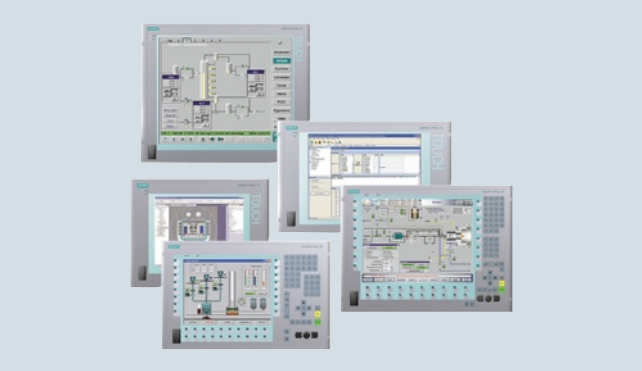
SIMATIC IPC477D [1]	Article No. 6AV7240- ■■■■■■ - ■■■■
Power supply:	
• 24 V DC industrial power supply	0
• 110/230 V AC industrial power supply with Namur; no power cable	1
• 110/230 V AC industrial power supply with Namur; European power cable	2
• 110/230 V AC industrial power supply with Namur; US power cable	3
• 110/230 V AC industrial power supply with Namur; Chinese power cable	4
• 110/230 V AC industrial power supply with Namur; Italian power cable	5
• 110/230 V AC industrial power supply with Namur; Swiss power cable	6
• 110/230 V AC industrial power supply with Namur; UK power cable	7
• 24 V DC industrial power supply and TPM (not for China and Russia)	8

[1] "Built to order versions with a delivery time of max. 15 working days and with identified repair.
[2] Only with main memory and NVRAM.

Software packages for SIMATIC IPC and S7-mEC

Overview

HMI complete systems



SIMATIC IPC and S7-mEC with SIMATIC WinCC flexible

- SIMATIC IPC packages with WinCC flexible are an innovative solution for simple visualization tasks directly at the machine in the field of HMI.
- This package can only be supplied if a SIMATIC IPC or S7-mEC (same quantity) is ordered together with the WinCC flexible Runtime software. It cannot be ordered subsequently.
- In combination with the embedded SIMATIC IPC (HMI IPC477C (PRO) and IPC427C) and the embedded controller S7-mEC, there are turn-key solutions (bundles), i.e. the runtime software is already preinstalled.

SIMATIC IPC with SIMATIC WinCC (TIA Portal)

- The SIMATIC IPC packages with WinCC make it easy to order all the components required for an HMI solution on the basis of a Panel PC.
- This package can only be supplied if a SIMATIC IPC (same quantity) is ordered together with the WinCC RT Advanced or WinCC RT Professional software. It cannot be ordered subsequently.
- In combination with the embedded SIMATIC IPC (IPC277D / HMI IPC477C (PRO) / IPC477D and IPC227D / IPC427C / IPC427D) there are turn-key solutions (bundles) available, i.e. the runtime software is already preinstalled.

SIMATIC IPC with SIMATIC WinAC RTX (F)

- The SIMATIC IPC packages with WinAC RTX (F) make it easy to order all the components required for a control solution on the basis of an industrial PC.
- This package can only be supplied if a SIMATIC Industrial PC (same quantity) is ordered together with the WinAC RTX (F) Runtime software. It cannot be ordered subsequently.
- In combination with the embedded SIMATIC IPC (IPC277D / HMI IPC477C (PRO) / IPC477D and IPC227D / IPC427C / IPC427D) and the S7-mEC embedded controller, there are turn-key solutions (bundles) available, i.e. the runtime software is already preinstalled.

Ordering data

	Article No.
SIMATIC WinCC flexible package [1] [3] (incl. archives and recipes)	**6AV6623- 2 ■ A 0 0 - 0 A A 0**
WinCC flexible 2008 Runtime	
• 128 PowerTags	**B**
• 512 PowerTags	**D**
• 2048 PowerTags	**F**
• 4096 PowerTags	**G**
SIMATIC WinCC package [2]	**6AV6382- 2 ■ A 0 7 - 2 A X 0**
WinCC V7.2 Runtime [2]	
• 128 PowerTags	**C**
• 256 Power Tags	**D**
• 1 024 PowerTags	**E**
• 8 192 PowerTags	**H**
• 65 536 PowerTags	**F**
SIMATIC WinCC package [2]	**6AV6382- 2 ■ A 0 7 - 0 A X 0**
WinCC V7.0 SP3 Runtime [2]	
• 128 PowerTags	**C**
• 512 PowerTags	**D**
• 2 048 PowerTags	**E**
• 8 192 PowerTags	**H**
• 65 536 PowerTags	**F**

1) Only if ordered together with a SIMATIC IPC, SIMATIC Panel PC Ex, or S7-mEC
2) Only if ordered together with a SIMATIC IPC
3) The current version will always be supplied

SIMATIC WinCC (TIA Portal)	
WinCC Runtime Advanced Package [1] [3]	**6AV2114- 2 ■ A 0 0 - 0 A A 0**
Incl. Recipes + Logging	
• 128 PowerTags	**B**
• 512 PowerTags	**D**
• 2048 PowerTags	**F**
• 4096 PowerTags	**H**
SIMATIC WinCC Runtime Professional Package [2] [3]	**6AV2115- 2 ■ A 0 0 - 0 A A 0**
• 128 PowerTags	**B**
• 512 PowerTags	**D**
• 2048 PowerTags	**F**
• 4096 PowerTags	**H**
• 8192 PowerTags	**K**
• 65536 PowerTags	**M**

1) Only if ordered together with a SIMATIC IPC, SIMATIC Panel PC Ex, or S7-mEC
2) Only if ordered together with a SIMATIC IPC
3) The current version will always be supplied

SIMATIC WinAC RTX (F) package	
• SIMATIC WinAC RTX [1] [2] [3]	**6ES7671-0RC08-6YA0**
• SIMATIC WinAC RTX F [1] [2] [3]	**6ES7671-1RC08-6YA0**

1) Only if ordered together with a SIMATIC IPC
2) The current version will always be supplied
3) For 32-bit operating systems only

Note:

For ordering data for Panel PCs and accessories, see configurators in the catalog ST 80 / ST PC, "SIMATIC Panel PCs".

Software packages for SIMATIC IPC and S7-mEC

Ordering data — Article No.

Ready-to-use SIMATIC HMI IPC477C with WinCC

("Built to order" with max. delivery time of 14 working days; only repairs are possible for hardware)

SIMATIC HMI IPC477C with WinCC V7.0 SP2	**6AV7884-** ■	**A** ■	■	**0** - ■	**B** ■	**0**
Fanless, 5 x USB2.0 (500 mA), 1 of which at front, 1 x COM (RS232), power supply 24 V DC with On/Off switch, 2 x PROFINET (IE), 2 GB main memory (DDR3-SDRAM), CompactFlash Card 8 GB; Windows Embedded 2009 preinstalled; SIMATIC WinCC V7.0 SP2 Runtime preinstalled						
Client configurations	■	**A**	**1**	**4**	**X**	
Celeron M processor, 1.2 GHz, 1 GB SDRAM-DDR3, 8 GB CF card, runtime license 128 PT						
• 15" Touch	**3**					
• 19" Touch	**5**					
Client and stand-alone station configurations	■	**E**	**2**	**4**	**X**	
Core2 Solo processor 1.2 GHz, 2 GB SDRAM-DDR3, 8 GB CF card, runtime license 128 PT						
• 15" Touch	**3**					
• 19" Touch	**5**					
Stand-alone station configurations	■	**H**	**3**	■	■	
Processor Core2 Duo 1.2 GHz, 4 GB SDRAM-DDR3						
• 15" Touch	**3**					
• 19" Touch	**5**					
• 8 GB CF card	■	**H**	**3**	**4**		
• 50 GB SSD	■	**H**	**3**	**6**		
• Runtime license 128 PT	■	**H**	**3**	■	**X**	
• Runtime license 2048 PT	■	**H**	**3**	■	**W**	

Note:

Other ready-to-use SIMATIC HMI IPC477Cs can be found in the catalog ST 80 / ST PC, chapter Panel PC, under HMI IPC477C.

SIMATIC ET 200 distributed I/O

9

Brochures

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

www.siemens.com/simatic/printmaterial

Interface modules without CPU
IM 155-6

Overview

- Interface module for linking the ET 200SP to PROFINET or PROFIBUS
- Handles all data exchange with the controller
- BusAdapter (BA) for individual PROFINET connection
- Integrated 2-port switch for line configuration
- Depending on the selected interface module
  - Up to a maximum of 64 I/O modules per station
  - Replacement of I/O modules during operation
- Operation with gaps (non-equipped BaseUnits) possible
- Replacement of an I/O module possible during operation (hot swapping)
- Load group formation without power module

Technical specifications

	6ES7155-6AA00-0BN0 IM 155-6 PN ST with BA 2xRJ45 and server module	**6ES7155-6AU00-0BN0** IM 155-6 PN ST with server module	**6ES7155-6AU00-0CN0** IM 155-6 PN HF with server module	**6ES7155-6BA00-0CN0** IM155-6DP HF with PROFIBUS connector and server module
General information				
Product function				
• I&M data	Yes	Yes	Yes; I&M0 to I&M4	Yes; I&M0 to I&M3
Engineering with				
• STEP 7 TIA Portal can be configured/integrated as of version	V11 SP2 with HSP0024 / -	V12 / V12		
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision				GSD as of Revision 5
• PROFINET as of GSD version/GSD revision	V2.3 / -	V1.0 / V2.23	V2.3 / -	
Supply voltage				
Type of supply voltage		24 V DC	DC	DC
Rated value (DC)	24 V	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes	Yes
Mains buffering				
• Mains/voltage failure stored energy time	5 ms	5 ms	5 ms	5 ms
Hardware configuration				
Rack				
• maximum	32	32	64	
Interfaces				
Number of PROFINET interfaces	1	1	1	
Number of PROFIBUS interfaces				1

Technical specifications (continued)

	6ES7155-6AA00-0BN0 IM 155-6 PN ST with BA 2xRJ45 and server module	6ES7155-6AU00-0BN0 IM 155-6 PN ST with server module	6ES7155-6AU00-0CN0 IM 155-6 PN HF with server module	6ES7155-6BA00-0CN0 IM155-6DP HF with PROFIBUS connector and server module
1st interface				
• Interface types				
- Number of ports	2	2	2	
- Integrated switch	Yes	Yes	Yes	
- RJ 45 (Ethernet)	Yes; Pre-assembled BusAdapter BA 2x RJ45			
- RS 485				Yes
- Bus adapter (PROFINET)	Yes; Applicable BusAdapters: BA 2x RJ45, BA 2x FC	Yes; Applicable BusAdapters: BA 2x RJ45, BA 2x FC	Yes	
- Output current of the interface, max.				90 mA
• Protocols				
- PROFINET IO Device	Yes	Yes	Yes	
- Open IE communication	Yes	Yes	Yes	
- PROFIBUS DP slave				Yes
- Media redundancy	Yes	Yes	Yes; As MRP or MRPD client; max. 50 or 30 devices in the ring	
Interface types				
RJ 45 (Ethernet)				
• 10 Mbps	Yes; for Ethernet services	Yes; for Ethernet services	Yes; for Ethernet services	
• 100 Mbps	Yes; PROFINET with 100 Mbit/s full duplex (100BASE-TX)	Yes; PROFINET with 100 Mbit/s full duplex (100BASE-TX)	Yes; PROFINET wit h 100 Mbit/s full duplex (100BASE-TX)	
• Transmission procedure	PROFINET with 100 Mbit/s full duplex (100BASE-TX)	PROFINET with 100 Mbit/s full duplex (100BASE-TX)	PROFINET with 100 Mbit/s full duplex (100BASE-TX)	
• Autonegotiation	Yes	Yes	Yes	
• Autocrossing	Yes	Yes	Yes	
RS485				
• Transmission rate, max.				12 Mbit/s
Protocols				
Supports protocol for PROFINET IO	Yes	Yes	Yes	
PROFINET IO Device				
• Services				
- Isochronous mode			Yes	
- Open IE communication	Yes	Yes	Yes	
- IRT, supported	Yes; with send cycles of between 250 µs and 4 ms in increments of 125 µs	Yes; with send cycles of between 250 µs and 4 ms in increments of 125 µs	Yes; 250 µs, 500 µs, 1 ms, 2 ms, 4 ms additionally with IRT with high performance: 250 µs to 4 ms in 125 µs frame	
- MRP, supported			Yes	
- MRPD, supported			Yes	
- PROFIenergy		Yes	Yes	
- Prioritized startup	Yes	Yes	Yes	
- Shared device	Yes	Yes	Yes	
- Number of IO controllers with shared device, max.		2	4	
Open IE communication				
• TCP/IP	Yes	Yes	Yes	
• SNMP	Yes	Yes	Yes	
• LLDP	Yes	Yes	Yes	
PROFIBUS				
• Services				
- SYNC capability				Yes
- FREEZE capability				Yes
- DPV0				No
- DPV1				Yes

Technical specifications (continued)

	6ES7155-6AA00-0BN0 IM 155-6 PN ST with BA 2xRJ45 and server module	6ES7155-6AU00-0BN0 IM 155-6 PN ST with server module	6ES7155-6AU00-0CN0 IM 155-6 PN HF with server module	6ES7155-6BA00-0CN0 IM155-6DP HF with PROFIBUS connector and server module
Isochronous mode				
Isochronous operation (application synchronized up to terminal)			Yes	
equidistance			Yes	
shortest clock pulse			250 µs	
max. cycle			4 ms	
Interrupts/diagnostics/ status information				
Status indicator	Yes	Yes	Yes	Yes
Alarms				
• Alarms	Yes	Yes	Yes	Yes
Diagnostic messages				
• Diagnostic functions	Yes	Yes	Yes	Yes
Diagnostics indication LED				
• RUN LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED	Yes; Red LED	Yes; Red LED
• MAINT LED	Yes; yellow LED	Yes; yellow LED	Yes; yellow LED	Yes; yellow LED
• Monitoring the supply voltage	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; green PWR LED
• Connection display LINK TX/RX	Yes	Yes; 2x green LED	Yes; 2x green LED	
• Connection display DP				Yes; Green DP LED
Isolation				
Isolation checked with	707 V DC between supply voltage and electronics; 1500 V AC between Ethernet and electronics	707 V DC between supply voltage and electronics (type test); 1500 V AC between Ethernet and electronics (type test)	707 V DC between supply voltage and electronics (type test); 1500 V AC between Ethernet and electronics (type test)	707 V DC (type test)
Standards, approvals, certificates				
Network loading class	3	3	3	
Security level	According to Security Level 1 Test Cases V1.1.1	According to Security Level 1 Test Cases V1.1.1	According to Security Level 1 Test Cases V1.1.1	
Ambient conditions				
Operating temperature				
• horizontal installation, min.	0 °C	0 °C	0 °C	0 °C
• horizontal installation, max.	60 °C	60 °C	60 °C	60 °C
• vertical installation, min.	0 °C	0 °C	0 °C	0 °C
• vertical installation, max.	50 °C	50 °C	50 °C	50 °C
Dimensions				
Width	50 mm	50 mm	50 mm	50 mm
Height	117 mm	117 mm	117 mm	117 mm
Depth	74 mm	74 mm	74 mm	74 mm
Weights				
Weight, approx.	191 g	147 g; without bus adapter	147 g; without bus adapter	150 g

Ordering data

	Article No.
Interface module Standard	
• IM 155-6PN ST, with server module and installed BusAdapter BA 2xRJ45	**6ES7155-6AA00-0BN0**
• IM 155-6PN ST, with server module, without BusAdapter	**6ES7155-6AU00-0BN0**
Interface module High Feature	
• IM 155-6DP HF, with server module, with multi-hot-swap, incl. PROFIBUS connector	**6ES7155-6BA00-0CN0**
• IM 155-6PN HF, incl. server module, without BusAdapter	**6ES7155-6AU00-0CN0**
Accessories	
Digital input modules	
Digital input module DI 8x24 V DC Standard, BU type A0, color code CC01	**6ES7131-6BF00-0BA0**
Digital input module DI 16x24 V DC Standard, BU type A0, color code CC00	**6ES7131-6BH00-0BA0**
Digital input module DI 8x24 V DC High Feature, BU type A0, color code CC01, channel-specific diagnostics, isochronous mode, shared input (MSI)	**6ES7131-6BF00-0CA0**
Digital input module DI 8x24 V DC Source Input, Basic, BU type A0, color code CC02	**6ES7131-6BF60-0AA0**
Digital input module DI 8xNAMUR High Feature, BU type A0, color code CC01	**6ES7131-6TF00-0CA0**
Digital input module DI 4x120 V AC-230 V AC Standard, BU type B1, color code CC41	**6ES7131-6FD00-0BB1**
Fail-safe digital input module F-DI 8x24 V DC High Feature, BU type A0, color code CC01, SIL3/Cat.4/PLe	**6ES7136-6BA00-0CA0**
Digital output modules	
Digital output module DQ 4x24 V DC/2 A Standard, BU type A0, color code CC02	**6ES7132-6BD20-0BA0**
Digital output module DQ 4x24 V DC/2 A High Feature, BU type A0, color code CC02, channel-precise diagnostics, isochronous mode, shared output (MSO)	**6ES7132-6BD20-0CA0**
Digital output module DQ 4x24 V AC-230 V AC/2 A Standard for BU type B1, color code CC41	**6ES7132-6FD00-0BB1**
Digital output module DQ 8x24 V DC/0.5 A Standard, BU type A0, color code CC02	**6ES7132-6BF00-0BA0**
Digital output module DQ 8x24 V DC/0.5 A High Feature, BU type A0, color code CC02	**6ES7132-6BF00-0CA0**
Digital output module DQ 8x24 V DC/0.5 A Sink output, Basic, BU type A0, color code CC01	**6ES7132-6BF60-0AA0**
Digital output module DQ 16x24 V DC/0.5 A Standard, BU type A0, color code CC00	**6ES7132-6BH00-0BA0**
Relay module RQ NO 4x120 V DC - 230 V AC/5 A Standard, normally-open, BU type B0, color code CC00	**6ES7132-6HD00-0BB0**
Signal relay module RQ CO 4x24 V UC/2 A Standard, changeover contact, BU type A0, color code CC00	**6ES7132-6GD50-0BA0**
Fail-safe digital output module F-DQ 4x24 V DC High Feature, BU type A0, color code CC01, SIL3/Cat.4/PLe	**6ES7136-6DB00-0CA0**
Fail-safe digital F output module relay 1 F-RQ, BU type F0, relay output (2 NO contacts), total output current 5 A, load voltages 24 V DC and 24...230 V AC; can be used up to SIL3 /Category 4/PLe if controlled via F-DQ	**6ES7136-6RA00-0BF0**
Analog input modules	
Analog input module AI 4xU/I 2-wire Standard, BU type A0 or A1, color code CC03, 16 bit, ± 0.3%	**6ES7134-6HD00-0BA1**
Analog input module AI 4xI 2-/4-wire Standard, BU type A0 or A1, color code CC03, 16 bit, ± 0.3%	**6ES7134-6GD00-0BA1**
Analog input module AI 4xRTD/TC 2-, 3-, 4-wire High Feature, BU type A0 or A1, color code CC00, 16 bit, ± 0.1%, scalable measuring range	**6ES7134-6JD00-0CA1**
Analog input module AI 2xU/I 2-/4-wire High Speed, BU type A0 or A1, color code CC00, 16 bit, ± 0.3%, isochronous mode above 250 µs, oversampling above 50 µs	**6ES7134-6HB00-0DA1**
Analog input module AI 8xRTD/TC 2-wire High Feature, BU type A0 or A1, color code CC00, 16 bit, ± 0.1%, scalable measuring range	**6ES7134-6JF00-0CA1**
Analog input module AI 2xU/I 2-/4-wire High Feature, BU type A0 or A1, color code CC05, 16 bit, ± 0.1%, independent channel isolation, isochronous mode above 1 ms	**6ES7134-6HB00-0CA1**
Analog input module AI Energy Meter Standard, BU type D0, color code CC00	**6ES7134-6PA00-0BD0**
Analog output modules	
Analog output module AQ 4xU/I Standard, BU type A0 or A1, color code CC00, 16 bit, ± 0.3%	**6ES7135-6HD00-0BA1**
Analog output module AQ 2xU/I High Speed, BU type A0 or A1, color code CC00, 16 bit, ± 0.3%	**6ES7135-6HB00-0DA1**
Analog output module AQ 2xU/I High Feature, BU type A0 or A1, color code CC00, 16 bit, ± 0.1%	**6ES7135-6HB00-0CA1**

Interface modules without CPU
IM 155-6

Ordering data

	Article No.
Communication modules	
Communication module CM 1xPtP Standard, for serial communication connections with RS232, RS422, RS485 interfaces. BU type A0, color code CC00	**6ES7137-6AA00-0BA0**
CM 4xIO-Link Master V1.1 Standard communication module, for connecting up to 4 IO-Link devices, time-based IO, BU type A0, color code CC04	**6ES7137-6BD00-0BA0**
CM AS-i Master ST communication module, BU type C0 or C1, color code CC00	**3RK7137-6SA00-0BC1**
Special modules	
Fail-safe power module F-PM-E 24 V DC/8 A PPM Standard, BU type C0, color code CC52, 2 inputs, 1 output, SIL3/Cat.4/PLe	**6ES7136-6PA00-0BC0**
BusAdapter BA 2xRJ45	**6ES7193-6AR00-0AA0**
BusAdapter BA 2xFC for increased vibration and EMC loads	**6ES7193-6AF00-0AA0**
BusAdapter BA 2xSCRJ, fiber-optic connection for POF or PCF cables up to 250 m, with monitoring of damping	**6ES7193-6AP00-0AA0**
Can only be used with High Feature interface modules	
Reference identification label	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
Shield connection	
5 shield connections and 5 shield terminals each for plugging onto BaseUnits with automatic low-impedance connection to functional ground	**6ES7193-6SC00-1AM0**
Labeling strips	
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	**6ES7193-6LA10-0AG0**

	Article 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 180	
180° cable outlet	
1 unit	**6GK1901-1BB10-2AA0**
10 units	**6GK1901-1BB10-2AB0**
50 units	**6GK1901-1BB10-2AE0**
DIN rail 35 mm	
Length: 483 mm for 19" cabinets	**6ES5710-8MA11**
Length: 530 mm for 600 mm cabinets	**6ES5710-8MA21**
Length: 830 mm for 900 mm cabinets	**6ES5710-8MA31**
Length: 2 m	**6ES5710-8MA41**
Manuals for ET 200SP distributed I/O system	
ET 200SP library: ET 200SP Manual Collection, comprising system manual, product information, and device manuals	
Manuals can be downloaded from the Internet as PDF files:	
http://www.siemens.com/simatic-docu	
SIMATIC Manual Collection	**6ES7998-8XC01-8YE0**
Electronic manuals on DVD, multi-language: 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	
SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current "Manual Collection" DVD and the three subsequent updates	
Spare parts	
Server module	**6ES7193-6PA00-0AA0**
Power supply connector for interface module	
For connecting the 24 V DC supply voltage	
With push-in terminals (10 units)	**6ES7193-4JB00-0AA0**
With screw-type terminals (10 units)	**6ES7193-4JB50-0AA0**

Overview

- 4-, 8- and 16-channel digital input modules for the ET 200SP
- Can be plugged onto BaseUnits with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
  - Plain text identification of the module type and function class
  - 2D matrix code (order and serial number)
  - Connection diagram
  - Color coding of the module type DI: White
  - Hardware and firmware version
  - Color code CC for module-specific color coding of the potentials at the terminals of the BU
  - Complete Article No.
- Optional labeling accessories
  - Labeling Strips
  - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection

Technical specifications

	6ES731-6BF00-0BA0	6ES7131-6BF60-0AA0	6ES7131-6BH00-0BA0	6ES7131-6BF00-0CA0	6ES7131-6TF00-0CA0	6ES7131-6FD00-0BB1
	DI 8x24VDC ST	DI 8x24VDC SRC BA	DI 16x24VDC ST	DI 8x24VDC HF	DI 8xNAMUR HF	DI 4x120 ... 230VAC ST
General information						
Product function						
• I&M data	Yes	Yes	Yes	Yes	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with						
• STEP 7 TIA Portal can be configured/integrated as of version		V13 / V13		V12 SP1 / V13	V13 / V13	V13 / V13
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision	GSD as of Revision 5	GSD Revision 5	GSD as of Revision 5	GSD Revision 5	GSD Revision 5	GSD as of Revision 5
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -	V2.3	V2.3 / -
Operating mode						
• MSI				Yes		
Supply voltage						
Type of supply voltage	DC	24 V DC	DC	DC	24 V DC	
Rated value (DC)	24 V	24 V	24 V	24 V	24 V	
Rated value (AC)						230 V
Reverse polarity protection	Yes	Yes	Yes	Yes	Yes	Yes
Encoder supply						
Number of outputs		8		8	8	4
Short-circuit protection					Yes	No

Technical specifications (continued)

	6ES731-6BF00-0BA0	6ES7131-6BF60-0AA0	6ES7131-6BH00-0BA0	6ES7131-6BF00-0CA0	6ES7131-6TF00-0CA0	6ES7131-6FD00-0BB1
	DI 8x24VDC ST	DI 8x24VDC SRC BA	DI 16x24VDC ST	DI 8x24VDC HF	DI 8xNAMUR HF	DI 4x120 ... 230VAC ST
Output current						
• up to 60 °C, max.						10 A
24 V encoder supply						
• 24 V	Yes			Yes		
• Short-circuit protection	Yes			Yes		
• Output current, max.	700 mA			700 mA		
Digital inputs						
Number of digital inputs	8	8	16	8	8	4
Digital inputs, configurable					Yes	
Type					NAMUR	
m/p-reading		Yes; m-reading				No
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes	Yes	Yes		
Input characteristic curve in accordance with IEC 61131, type 2		No				
Input characteristic curve in accordance with IEC 61131, type 3	Yes	Yes	Yes	Yes		Yes
Pulse extension		No		Yes	Yes; 0.5 s, 1 s, 2 s	No
• Length				50 ms, 100 ms, 200 ms, 500 ms, 1 s, 2 s		
Edge evaluation					Yes; rising edge, falling edge, edge change	
Signal change flutter					Yes; 2 to 32 signal changes	
Flutter observation window					Yes; 0.5 s, 1 s to 100 s in 1-s steps	
Input voltage						
• Type of input voltage	DC	DC	DC	DC	DC	
• Rated value, AC						230 V
• Rated value, DC	24 V	24 V	24 V	24 V	8.2 V	
• for signal "0"	-30 to 5 V		-30 to 5 V	-30 to +5 V		0 to 40 V AC
• for signal "1"	11 to 30 V		11 to 30 V	11 to 30 V		
Input current						
• for signal "1", typ.	2.5 mA	6 mA	2.5 mA	2.5 mA		10.8 mA
• for 10 k switched contact						
- for signal "0"					0.35 to 1.2 mA	
- for signal "1"					2.1 to 7 mA	
• for unswitched contact						
- for signal "0", max. (permissible quiescent current)					0.5 mA	
- for signal "1"					typ. 8 mA	
• for NAMUR encoders						
- for signal "0"					0.35 to 1.2 mA	
- for signal "1"					2.1 to 7 mA	

Technical specifications (continued)

	6ES731-6BF00-0BA0 DI 8x24VDC ST	6ES7131-6BF60-0AA0 DI 8x24VDC SRC BA	6ES7131-6BH00-0BA0 DI 16x24VDC ST	6ES7131-6BF00-0CA0 DI 8x24VDC HF	6ES7131-6TF00-0CA0 DI 8xNAMUR HF	6ES7131-6FD00-0BB1 DI 4x120 ... 230VAC ST
Input delay (for rated value of input voltage)						
• Tolerated changeover time for changeover contacts					300 ms	
• for standard inputs						
- Parameterizable	Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)	Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)	Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)	Yes; 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms (in each case + delay of 30 to 500 µs, depending on line length)		No
• for interrupt inputs						
- Parameterizable		No		Yes		
• for counter/technological functions						
- Parameterizable		No				
• for NAMUR inputs						
- at "0" to "1", max.					12 ms	
- at "1" to "0", max.					12 ms	
Cable length						
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	200 m	1 000 m
• Cable length unshielded, max.	600 m	200 m	600 m	600 m		600 m
Encoder						
Connectable encoders						
• 2-wire sensor	Yes	Yes	Yes	Yes		Yes
- Permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA	1.5 mA	1.5 mA		
Isochronous mode						
Isochronous operation (application synchronized up to terminal)		No		Yes		No
Filtering and processing time (TCI), min.				420 µs		
Bus cycle time (TDP), min.				500 µs		
Interrupts/diagnostics/ status information						
Alarms						
• Diagnostic alarm	Yes	Yes	Yes	Yes	Yes; channel by channel	No
• Hardware interrupt		No		Yes	Yes; Parameterizable, channels 0 to 7	No

9

Technical specifications (continued)

	6ES731-6BF00-0BA0	6ES7131-6BF60-0AA0	6ES7131-6BH00-0BA0	6ES7131-6BF00-0CA0	6ES7131-6TF00-0CA0	6ES7131-6FD00-0BB1
	DI 8x24VDC ST	DI 8x24VDC SRC BA	DI 16x24VDC ST	DI 8x24VDC HF	DI 8xNAMUR HF	DI 4x120 ... 230VAC ST
Diagnostic messages						
• Diagnostic information readable					Yes	
• Diagnostics	Yes	Yes	Yes	Yes		
• Monitoring the supply voltage	Yes	Yes	Yes	Yes	Yes	
• Wire break	Yes		Yes	Yes	Yes	
• Short circuit	Yes			Yes	Yes	
• Group error					Yes	
Diagnostics indication LED						
• Monitoring the supply voltage	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics				Yes; Red LED	Yes; Red LED	No
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Galvanic isolation						
Electrical isolation channels						
• between the channels and the backplane bus	Yes	Yes	Yes	Yes	Yes	Yes
Isolation						
Isolation checked with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	
Ambient conditions						
Operating temperature						
• horizontal installation, min.	0 °C		0 °C			
• horizontal installation, max.	60 °C		60 °C			
• vertical installation, min.	0 °C		0 °C			
• vertical installation, max.	50 °C		50 °C			
Dimensions						
Width	15 mm	15 mm	15 mm	15 mm	15 mm	20 mm
Weights						
Weight, approx.	28 g	28 g	28 g	28 g	32 g	36 g

Ordering data

	Article No.
Digital input modules	
Digital input module DI 8x24 V DC Standard, BU type A0, color code CC01	**6ES7131-6BF00-0BA0**
Digital input module DI 16x24 V DC Standard, BU type A0, color code CC00	**6ES7131-6BH00-0BA0**
Digital input module DI 8x24 V DC High Feature, BU type A0, color code CC01, channel-specific diagnostics, isochronous mode, shared input (MSI)	**6ES7131-6BF00-0CA0**
Digital input module DI 8x24 V DC Source Input, Basic, BU type A0, color code CC02	**6ES7131-6BF60-0AA0**
Digital input module DI 8xNAMUR High Feature, BU type A0, color code CC01	**6ES7131-6TF00-0CA0**
Digital input module DI 4x120 V AC-230 V AC Standard, BU type B1, color code CC41	**6ES7131-6FD00-0BB1**
Usable BaseUnits	
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	**6ES7193-6BP00-0DA0**
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	**6ES7193-6BP00-0BA0**
BU15-P16+A10+2D BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	**6ES7193-6BP20-0DA0**
BU15-P16+A10+2B BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	**6ES7193-6BP20-0BA0**
BU20-P12+A0+4B BU type B1; BaseUnit (dark) with 12 process terminals to the module; for continuing the load group	**6ES7193-6BP20-0BB1**

	Article No.
Accessories	
Reference identification label 10 sheets of 16 labels	**6ES7193-6LF30-0AW0**
Labeling strips	
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	**6ES7193-6LA10-0AG0**
BU cover For covering empty slots (gaps); 5 units	
• 15 mm wide	**6ES7133-6CV15-1AM0**
Shield connection 5 shield supports and 5 shield terminals	**6ES7193-6SC00-1AM0**
Color-coded labels	
• Color code CC01, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP01-2MA0**
• Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units	**6ES7193-6CP71-2AA0**
• Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units	**6ES7193-6CP72-2AA0**
• Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units	**6ES7193-6CP73-2AA0**
• Color code CC41, module-specific, for 12 push-in terminals; for BaseUnit type B1; 10 units	**6ES7193-6CP41-2MB0**

Overview

- 4-, 8- and 16-channel digital output modules for the ET 200SP
- Can be plugged onto BaseUnits with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
  - Plain text identification of the module type and function class
  - 2D matrix code (order and serial number)
  - Connection diagram
  - Color coding of the module type DQ: black
  - Hardware and firmware version
  - Color code CC for module-specific color coding of the potentials at the terminals of the BU
  - Complete Article No.
- Optional labeling accessories
  - Labeling strips
  - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection

Technical specifications

	6ES7132-6BD20-0BA0	6ES7132-6BD20-0CA0	6ES7132-6FD00-0BB1	6ES7132-6BF00-0BA0	6ES7132-6BF00-0CA0
	DQ 4x24VDC/2A ST	DQ 4x24VDC/2A HF	DQ 4x24 ... 230VAC/2A	DQ 8x24VDC/0.5A ST	DQ 8x24VDC/0.5A HF
General information					
Product function					
• I&M data	Yes	Yes	Yes; I&M0 to I&M3	Yes	Yes
Engineering with					
• STEP 7 TIA Portal can be configured/integrated as of version		V13 / V13	V13 / V13		V13 / V13
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision	GSD as of Revision 5	GSD Revision 5	GSD as of Revision 5	GSD Revision 5	GSD Revision 5
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -
Operating mode					
• MSO		Yes			Yes
Supply voltage					
Type of supply voltage	DC	DC		DC	DC
Rated value (DC)	24 V	24 V		24 V	24 V
Rated value (AC)			230 V		
Reverse polarity protection	Yes	Yes		Yes	Yes
Digital outputs					
Number of digital outputs	4	4	4	8	8
Current-sinking			No		
Current-sourcing		Yes	Yes		
Digital outputs, configurable			No		
Short-circuit protection	Yes	Yes	No	Yes	

Technical specifications (continued)

	6ES7132-6BD20-0BA0	6ES7132-6BD20-0CA0	6ES7132-6FD00-0BB1	6ES7132-6BF00-0BA0	6ES7132-6BF00-0CA0
	DQ 4x24VDC/2A ST	DQ 4x24VDC/2A HF	DQ 4x24 ... 230VAC/2A	DQ 8x24VDC/0.5A ST	DQ 8x24VDC/0.5A HF
Open-circuit detection			No		
Overload protection			No		
Limitation of inductive shutdown voltage to	Typ. L+ (-50 V)	L+ -(37 to 41V)		Typ. L+ (-50 V)	Typ. L+ (-50 V)
Controlling a digital input	Yes	Yes; Minimum current consumption 7 mA	Yes	Yes	Yes
Switching capacity of the outputs					
• with resistive load, max.	2 A	2 A	2 A	0.5 A	0.5 A
• on lamp load, max.	10 W	10 W	100 W	5 W	5 W
Load resistance range					
• lower limit	12 Ω	12 Ω		48 Ω	48 Ω
• upper limit	3 400 Ω	3 400 Ω		12 kΩ	12 kΩ
Output voltage					
• Type of output voltage		DC			
• for signal "1", min.			20.4 V		
• Permissible voltage at output, min.			20.4 V		
• Permissible voltage at output, max.			264 V		
Output current					
• for signal "1" rated value	2 A	2 A	2 A	0.5 A	0.5 A
• for signal "0" residual current, max.	0.1 mA	0.1 mA	460 µA	0.1 mA	0.1 mA
Output delay with resistive load					
• "0" to "1", max.	50 µs		10 ms	50 µs	
• "1" to "0", max.	100 µs		10 ms	100 µs	
• "0" to "1", typ.	50 µs	50 µs		50 µs	50 µs
• "1" to "0", typ.	100 µs	100 µs		100 µs	100 µs
Parallel switching of 2 outputs					
• for logic links			No		
• for increased power	No	No	No	No	No
• for redundant control of a load	Yes		Yes	Yes	Yes
Switching frequency					
• with resistive load, max.	100 Hz	100 Hz	10 Hz	100 Hz	100 Hz
• with inductive load, max.	2 Hz	2 Hz	0.5 Hz	2 Hz	2 Hz
• on lamp load, max.	10 Hz	10 Hz	1 Hz	10 Hz	10 Hz
Aggregate current of the outputs					
• Max. current per channel			2 A		
• Max. current per module	8 A	8 A	8 A	4 A	4 A
Total current of the outputs (per module)					
• horizontal installation					
- up to 40 °C, max.	8 A		8 A		
- up to 50 °C, max.	6 A		6 A		
- up to 60 °C, max.	4 A		4 A		
• vertical installation					
- up to 30 °C, max.			8 A		
- up to 40 °C, max.	6 A		6 A		
- up to 50 °C, max.	4 A		4 A		
- up to 60 °C, max.	4 A				

Technical specifications (continued)

	6ES7132-6BD20-0BA0	6ES7132-6BD20-0CA0	6ES7132-6FD00-0BB1	6ES7132-6BF00-0BA0	6ES7132-6BF00-0CA0
	DQ 4x24VDC/2A ST	DQ 4x24VDC/2A HF	DQ 4x24 ... 230VAC/2A	DQ 8x24VDC/0.5A ST	DQ 8x24VDC/0.5A HF
Output current per channel					
• horizontal installation					
- up to 60 °C, max.			2 A		
• vertical installation					
- up to 50 °C, max.			2 A		
Triac outputs					
• Size of motor starters according to NEMA, max.			5		
Cable length					
• Cable length, shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• Cable length unshielded, max.	600 m	600 m	600 m	600 m	600 m
Isochronous mode					
Isochronous operation (application synchronized up to terminal)		Yes	No		Yes
Execution and activation time (TCO), min.					48 µs
Bus cycle time (TDP), min.		500 µs			500 µs
Interrupts/diagnostics/ status information					
Substitute values connectable	Yes	Yes	Yes	Yes	Yes
Alarms					
• Diagnostic alarm	Yes	Yes	No	Yes	Yes
Diagnostic messages					
• Monitoring the supply voltage	Yes	Yes		Yes	Yes
• Wire break	Yes	Yes		Yes	Yes
• Short circuit	Yes	Yes		Yes	Yes
Diagnostics indication LED					
• Monitoring the supply voltage	Yes; green PWR LED	Yes; green PWR LED		Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics		Yes; Red LED	No		Yes; Red LED
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Galvanic isolation					
Electrical isolation channels					
• between the channels and the backplane bus	Yes	Yes	Yes	Yes	Yes
Isolation					
Isolation checked with	707 V DC (type test)	707 V DC (type test)		707 V DC (type test)	707 V DC (type test)
Ambient conditions					
Operating temperature					
• horizontal installation, min.	0 °C			0 °C	
• horizontal installation, max.	60 °C			60 °C	
• vertical installation, min.	0 °C			0 °C	
• vertical installation, max.	50 °C			50 °C	
Dimensions					
Width	15 mm	15 mm	20 mm	15 mm	15 mm
Weights					
Weight, approx.	30 g	30 g	50 g	28 g	30 g

Technical specifications (continued)

	6ES7132-6BF60-0AA0 DQ 8x24VDC/0.5A SNK BA	6ES7132-6BH00-0BA0 DQ 16x24VDC/0.5A ST	6ES7132-6HD00-0BB0 RQ 4x120VDC-230VAC/5A NO ST	6ES7132-6GD50-0BA0 RQ 4x24VUC/2A CO ST
General information				
Product function				
• I&M data	Yes; I&M0 to I&M3	Yes	Yes; I&M0 to I&M3	Yes
Engineering with				
• STEP 7 TIA Portal can be configured/integrated as of version	V13 / V13		V12 SP1 / V13	V13 / V13
• STEP 7 can be configured/ integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision	GSD Revision 5	GSD Revision 5	GSD Revision 5	GSD Revision 5
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -	V2.3 / -	V2.3 / -
Operating mode				
• Multi-output	No			
• Oversampling	No			
• MSI	No			
• MSO	No			
Supply voltage				
Type of supply voltage	24 V DC	DC	DC	DC
Rated value (DC)	24 V	24 V	24 V	24 V
Reverse polarity protection		Yes	Yes	
Digital outputs				
Number of digital outputs	8	16		
Current-sinking	Yes			
Digital outputs, configurable	Yes			
Short-circuit protection	Yes	Yes		
Open-circuit detection	No			
Limitation of inductive shutdown voltage to	Typ. 47 V	Typ. L+ (-50 V)		
Controlling a digital input	Yes	Yes		
Switching capacity of the outputs				
• with resistive load, max.	0.5 A	0.5 A		
• on lamp load, max.	5 W	5 W		
Load resistance range				
• lower limit	48 Ω	48 Ω		
• upper limit	3 400 Ω	12 kΩ		
Output voltage				
• Type of output voltage	DC			
Output current				
• for signal "1" rated value	0.5 A	0.5 A		
• for signal "0" residual current, max.	5 µA	0.1 mA		
Output delay with resistive load				
• "0" to "1", max.	300 µs			
• "1" to "0", max.	600 µs			
• "0" to "1", typ.		50 µs		
• "1" to "0", typ.		100 µs		
Parallel switching of 2 outputs				
• for increased power	No	No		No
• for redundant control of a load	Yes	Yes		

Technical specifications (continued)

	6ES7132-6BF60-0AA0 DQ 8x24VDC/0.5A SNK BA	6ES7132-6BH00-0BA0 DQ 16x24VDC/0.5A ST	6ES7132-6HD00-0BB0 RQ 4x120VDC-230VAC/5A NO ST	6ES7132-6GD50-0BA0 RQ 4x24VUC/2A CO ST
Switching frequency				
• with resistive load, max.	100 Hz	100 Hz	2 Hz	2 Hz
• with inductive load, max.	0.5 Hz	2 Hz	0.5 Hz	
• on lamp load, max.	10 Hz	10 Hz	2 Hz	
Aggregate current of the outputs				
• Max. current per channel	0.5 A			
• Max. current per module	4 A	8 A	20 A	8 A
Relay outputs				
• Number of relay outputs			4	4
• Rated input voltage of relay coil L+ (DC)			24 V	24 V
• Current consumption of relays (coil current of all relays), max.			40 mA	40 mA
• external protection for relay outputs			Yes, with 6A	
• Switching capacity of contacts				
- with resistive load, max.				2 A
- Thermal continuous current, max.			5 A	2 A
- rated switching voltage (DC)				24 V
- rated switching voltage (AC)				24 V
Cable length				
• Cable length, shielded, max.		1 000 m	1 000 m	1 000 m
• Cable length unshielded, max.		600 m	200 m	200 m
Isochronous mode				
Isochronous operation (application synchronized up to terminal)	No			
Interrupts/diagnostics/ status information				
Substitute values connectable		Yes	Yes	Yes
Alarms				
• Diagnostic alarm		Yes	Yes	Yes
Diagnostic messages				
• Diagnostics	Yes			
• Monitoring the supply voltage	Yes	Yes	Yes	Yes
• Wire break		Yes		
• Short circuit		Yes		
Diagnostics indication LED				
• Monitoring the supply voltage	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Galvanic isolation				
Electrical isolation channels				
• between the channels and the backplane bus	Yes	Yes	Yes	Yes
Isolation				
Isolation checked with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)
Ambient conditions				
Operating temperature				
• horizontal installation, min.		0 °C	0 °C	
• horizontal installation, max.		60 °C	60 °C	
• vertical installation, min.		0 °C	0 °C	
• vertical installation, max.		50 °C	50 °C	
Dimensions				
Width	15 mm	15 mm	20 mm	15 mm
Weights				
Weight, approx.	30 g	28 g	40 g	30 g

Ordering data

	Article No.
Digital output modules	
Digital output module DQ 4x24 V DC/2 A Standard, BU type A0, color code CC02	**6ES7132-6BD20-0BA0**
Digital output module DQ 4x24 V DC/2 A High Feature, BU type A0, color code CC02, channel-precise diagnostics, isochronous mode, shared output (MSO)	**6ES7132-6BD20-0CA0**
Digital output module DQ 4x24 V AC-230 V AC/2 A Standard for BU type B1, color code CC41	**6ES7132-6FD00-0BB1**
Digital output module DQ 8x24 V DC/0.5 A Standard, BU type A0, color code CC02	**6ES7132-6BF00-0BA0**
Digital output module DQ 8x24 V DC/0.5 A High Feature, BU type A0, color code CC02	**6ES7132-6BF00-0CA0**
Digital output module DQ 8x24 V DC/0.5 A Sink Output, Basic, BU type A0, color code CC01	**6ES7132-6BF60-0AA0**
Digital output module DQ 16x24 V DC/0.5 A Standard, BU type A0, color code CC00	**6ES7132-6BH00-0BA0**
Relay module RQ NO 4x120 V DC - 230 V AC/5 A Standard, normally-open, BU type B0, color code CC00	**6ES7132-6HD00-0BB0**
Signal relay module RQ CO 4x24 V UC/2 A Standard, changeover contact, BU type A0, color code CC00	**6ES7132-6GD50-0BA0**
Usable BaseUnits	
BU15-P16+A0+2D	**6ES7193-6BP00-0DA0**
BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	
BU15-P16+A0+2B	**6ES7193-6BP00-0BA0**
BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	
BU15-P16+A10+2D	**6ES7193-6BP20-0DA0**
BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	
BU15-P16+A10+2B	**6ES7193-6BP20-0BA0**
BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	
BU20-P12+A4+0B	**6ES7193-6BP20-0BB0**
BU type B0; BaseUnit (dark) with 12 process terminals (1...12) to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the load group	
BU20-P12+A0+4B	**6ES7193-6BP20-0BB1**
BU type B1; BaseUnit (dark) with 12 process terminals to the module; for continuing the load group	
Accessories	
Reference identification label	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
Labeling strips	
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	**6ES7193-6LA10-0AG0**
BU cover	
For covering empty slots (gaps); 5 units	
• 15 mm wide	**6ES7133-6CV15-1AM0**
• 20 mm wide	**6ES7133-6CV20-1AM0**
Shield connection	**6ES7193-6SC00-1AM0**
5 shield supports and 5 shield terminals	
Color-coded labels	
• Color code CC01, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP01-2MA0**
• Color code CC02, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP02-2MA0**
• Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units	**6ES7193-6CP71-2AA0**
• Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units	**6ES7193-6CP72-2AA0**
• Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units	**6ES7193-6CP73-2AA0**
• Color code CC41, module-specific, for 12 push-in terminals; for BaseUnit type B1; 10 units	**6ES7193-6CP41-2MB0**

Overview

- 2-, 4- and 8-channel analog input modules for the ET 200SP
- Can be plugged into type A0 or A1 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
  - Plain text identification of the module type and function class
  - 2D matrix code (order and serial number)
  - Connection diagram
  - Color coding of the module type AI: Light blue
  - Hardware and firmware version
  - Color code CC for module-specific color coding of the potentials at the terminals of the BU
  - Complete Article No.
- Optional labeling accessories
  - Labeling strips
  - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection

Technical specifications

	6ES7134-6HD00-0BA1 AI 4xU/I 2-wire ST	**6ES7134-6GD00-0BA1** AI 4xI 2-/4-wire ST	**6ES7134-6JD00-0CA1** AI 4xRTD/TC 2-/3-/4-wire HF
General information			
Product function			
• I&M data	Yes	Yes	Yes; I&M0 to I&M3
Engineering with			
• STEP 7 TIA Portal can be configured/integrated as of version			V12 SP1 / V13
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / V5.5 SP4
• PROFIBUS as of GSD version/GSD revision	GSD Revision 5	GSD Revision 5	GSD Revision 5
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -	GSDML V2.3
CiR - Configuration in RUN			
Reparameterization possible in RUN			Yes
Calibration possible in RUN			Yes
Supply voltage			
Rated value (DC)	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes
Analog inputs			
Number of analog inputs	4	4	4
permissible input voltage for voltage input (destruction limit), max.	30 V		30 V
Constant measurement current for resistance-type transmitter, typ.			2 mA
Cycle time (all channels), min.	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)	Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels); for line compensation in case of a three-wire connection, an additional cycle is necessary
Technical unit for temperature measurement adjustable			Yes

Technical specifications (continued)

	6ES7134-6HD00-0BA1 AI 4xU/I 2-wire ST	6ES7134-6GD00-0BA1 AI 4xI 2-/4-wire ST	6ES7134-6JD00-0CA1 AI 4xRTD/TC 2-/3-/4-wire HF
Input ranges (rated values), voltages			
• 0 to +10 V	Yes; 15 bit		
• 1 to 5 V	Yes; 15 bit		
• -1 V to +1 V			Yes; 16 bit incl. sign
• -10 V to +10 V	Yes; 16 bit incl. sign		
• -250 mV to +250 mV			Yes; 16 bit incl. sign
• -5 V to +5 V	Yes; 16 bit incl. sign		
• -50 mV to +50 mV			Yes; 16 bit incl. sign
• -80 mV to +80 mV			Yes; 16 bit incl. sign
Input ranges (rated values), currents			
• 0 to 20 mA	Yes; 15 bit	Yes; 15 bit	
• -20 to +20 mA		Yes; 16 bit incl. sign	
• 4 to 20 mA	Yes; 15 bit	Yes; 15 bit	
Input ranges (rated values), thermoelements			
• Type B			Yes; 16 bit incl. sign
• Type C			Yes; 16 bit incl. sign
• Type E			Yes; 16 bit incl. sign
• Type J			Yes; 16 bit incl. sign
• Type K			Yes; 16 bit incl. sign
• Type L			Yes; 16 bit incl. sign
• Type N			Yes; 16 bit incl. sign
• Type R			Yes; 16 bit incl. sign
• Type S			Yes; 16 bit incl. sign
• Type T			Yes; 16 bit incl. sign
• Type U			Yes; 16 bit incl. sign
• Type TXK/TXK(L) to GOST			Yes; 16 bit incl. sign
Input ranges (rated values), resistance thermometers			
• Cu 10			Yes; 16 bit incl. sign
• Ni 100			Yes; 16 bit incl. sign
• Ni 1000			Yes; 16 bit incl. sign
• LG-Ni 1000			Yes; 16 bit incl. sign
• Ni 120			Yes; 16 bit incl. sign
• Ni 200			Yes; 16 bit incl. sign
• Ni 500			Yes; 16 bit incl. sign
• Pt 100			Yes; 16 bit incl. sign
• Pt 1000			Yes; 16 bit incl. sign
• Pt 200			Yes; 16 bit incl. sign
• Pt 500			Yes; 16 bit incl. sign
Input ranges (rated values), resistors			
• 0 to 150 ohms			Yes; 15 bit
• 0 to 300 ohms			Yes; 15 bit
• 0 to 600 ohms			Yes; 15 bit
• 0 to 3000 ohms			Yes; 15 bit
• 0 to 6000 ohms			Yes; 15 bit
• PTC			Yes; 15 bit
Thermocouple (TC)			
• Temperature compensation			
- Parameterizable			Yes
Resistance thermometer (RTD)			
• permissible input voltage for voltage input (destruction limit), max.			30 V
Cable length			
• Cable length, shielded, max.	1 000 m	1 000 m	200 m; 50 m with thermocouples

Technical specifications (continued)

	6ES7134-6HD00-0BA1 AI 4xU/I 2-wire ST	6ES7134-6GD00-0BA1 AI 4xI 2-/4-wire ST	6ES7134-6JD00-0CA1 AI 4xRTD/TC 2-/3-/4-wire HF
Analog value creation			
Integrations and conversion time/resolution per channel			
• Resolution with overrange (bit including sign), max.	16 bit	16 bit	16 bit
• Integration time, parameterizable	Yes	Yes	Yes
• Basic conversion time, including integration time, ms			
- Additional processing time for wire-break check			2 ms; In the ranges resistance thermometers, resistors and thermocouples
- Additional power line wire-break check			2 ms; for 3/4 wire transducer (resistance thermometer and resistor)
• Interference voltage suppression for interference frequency f1 in Hz	16.6 / 50 / 60 Hz	16.6 / 50 / 60 Hz	16.6 / 50 / 60 Hz
• Conversion time (per channel)	180 / 60 / 50 ms	180 / 60 / 50 ms	180 / 60 / 50 ms
Smoothing of measured values			
• Parameterizable	Yes	Yes	Yes
Encoder			
Connection of signal encoders			
• for voltage measurement	Yes		Yes
• for current measurement as 2-wire transducer	Yes	Yes	
• Burden of 2-wire transmitter, max.	650 Ω	650 Ω	
• 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			
Basic error limit (operational limit at 25 °C)			
• Voltage, relative to input area, (+/-)	0.3 %		0.05 %
• Current, relative to input area, (+/-)	0.3 %	0.3 %	
• Resistance, relative to input area, (+/-)			0.05 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency			
• Series mode interference (peak value of interference < rated value of input range), min.	70 dB	70 dB	70 dB
• common mode voltage, max.	10 V	10 V	10 V
• Common mode interference, min.	90 dB	90 dB	90 dB
Interrupts/diagnostics/ status information			
Alarms			
• Diagnostic alarm	Yes	Yes	Yes
• Limit value alarm			Yes; two upper and two lower limit values in each case
Diagnostic messages			
• Diagnostics	Yes	Yes	Yes
• Monitoring the supply voltage	Yes	Yes	Yes
• Wire break	Yes; at 4 to 20 mA	Yes; at 4 to 20 mA	Yes; channel by channel
• Short circuit	Yes; with 1 to 5 V or 2-wire mode: Short-circuit of the encoder supply to ground or of an input to the encoder supply	Yes; 2-wire mode: Short-circuit of the encoder supply to ground or of an input to the encoder supply	
• Overflow/underflow	Yes	Yes	Yes; channel by channel

Technical specifications (continued)

	6ES7134-6HD00-0BA1 AI 4xU/I 2-wire ST	6ES7134-6GD00-0BA1 AI 4xI 2-/4-wire ST	6ES7134-6JD00-0CA1 AI 4xRTD/TC 2-/3-/4-wire HF
Diagnostics indication LED			
• Monitoring the supply voltage	Yes; Green LED	Yes; Green LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics			Yes; Red LED
• for module diagnostics	Yes; Green/red LED	Yes; Green/red LED	Yes; green/red DIAG LED
Galvanic isolation			
Electrical isolation channels			
• between the channels and the backplane bus	Yes	Yes	Yes
Isolation			
Isolation checked with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)
Ambient conditions			
Operating temperature			
• horizontal installation, min.	0 °C	0 °C	
• horizontal installation, max.	60 °C	60 °C	
• vertical installation, min.	0 °C	0 °C	
• vertical installation, max.	50 °C	50 °C	
Dimensions			
Width	15 mm	15 mm	15 mm
Weights			
Weight, approx.	31 g	31 g	30 g

	6ES7134-6HB00-0DA1 AI 2xU/I 2-/4-wire HS	6ES7134-6HB00-0CA1 AI 2xU/I 2-/4-wire HF	6ES7134-6JF00-0CA1 AI 8xRTD/TC 2-wire HF
General information			
Product function			
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3	Yes
Engineering with			
• STEP 7 TIA Portal can be configured/integrated as of version	V12 SP1 / V13	V13	V13
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 / -
• PROFIBUS as of GSD version/GSD revision	GSD Revision 5	GSD Revision 5	GSD Revision 5
• PROFINET as of GSD version/GSD revision	GSDML V2.3	GSDML V2.3	V2.3
Operating mode			
• Oversampling	Yes		
- Values per cycle max.	16		
- Resolution min.	50 µs		
CiR - Configuration in RUN			
Reparameterization possible in RUN	Yes	Yes	Yes
Calibration possible in RUN		Yes	Yes
Supply voltage			
Type of supply voltage	DC	DC	
Rated value (DC)	24 V	24 V	24 V
Reverse polarity protection	Yes	Yes	Yes
Analog inputs			
Number of analog inputs	2	2	8
permissible input voltage for voltage input (destruction limit), max.	30 V	30 V	30 V
Constant measurement current for resistance-type transmitter, typ.			2 mA

Technical specifications (continued)

	6ES7134-6HB00-0DA1 AI 2xU/I 2-/4-wire HS	6ES7134-6HB00-0CA1 AI 2xU/I 2-/4-wire HF	6ES7134-6JF00-0CA1 AI 8xRTD/TC 2-wire HF
Cycle time (all channels), min.	250 µs		Sum of the basic conversion times and additional processing times (depending on the parameterization of the active channels)
Technical unit for temperature measurement adjustable			Yes
Input ranges (rated values), voltages			
• 0 to +10 V	Yes; 15 bit	Yes; 15 bit	
• 1 to 5 V	Yes; 13 bit	Yes; 15 bit	
• -1 V to +1 V			Yes; 16 bit incl. sign
• -10 V to +10 V	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• -250 mV to +250 mV			Yes; 16 bit incl. sign
• -5 V to +5 V	Yes; 15 bit incl. sign	Yes; 16 bit incl. sign	
• -50 mV to +50 mV			Yes; 16 bit incl. sign
• -80 mV to +80 mV			Yes; 16 bit incl. sign
Input ranges (rated values), currents			
• 0 to 20 mA	Yes; 15 bit	Yes; 15 bit	
• -20 to +20 mA	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	
• 4 to 20 mA	Yes; 14 bit	Yes; 15 bit	
Input ranges (rated values), thermoelements			
• Type B			Yes; 16 bit incl. sign
• Type C			Yes; 16 bit incl. sign
• Type E			Yes; 16 bit incl. sign
• Type J			Yes; 16 bit incl. sign
• Type K			Yes; 16 bit incl. sign
• Type L			Yes; 16 bit incl. sign
• Type N			Yes; 16 bit incl. sign
• Type R			Yes; 16 bit incl. sign
• Type S			Yes; 16 bit incl. sign
• Type T			Yes; 16 bit incl. sign
• Type U			Yes; 16 bit incl. sign
• Type TXK/TXK(L) to GOST			Yes; 16 bit incl. sign
Input ranges (rated values), resistance thermometers			
• Ni 100			Yes; 16 bit incl. sign
• Ni 1000			Yes; 16 bit incl. sign
• LG-Ni 1000			Yes; 16 bit incl. sign
• Ni 120			Yes; 16 bit incl. sign
• Ni 200			Yes; 16 bit incl. sign
• Ni 500			Yes; 16 bit incl. sign
• Pt 100			Yes; 16 bit incl. sign
• Pt 1000			Yes; 16 bit incl. sign
• Pt 200			Yes; 16 bit incl. sign
• Pt 500			Yes; 16 bit incl. sign
Input ranges (rated values), resistors			
• 0 to 150 ohms			Yes; 15 bit
• 0 to 300 ohms			Yes; 15 bit
• 0 to 600 ohms			Yes; 15 bit
• 0 to 3000 ohms			Yes; 15 bit
• 0 to 6000 ohms			Yes; 15 bit
• PTC			Yes; 15 bit
Thermocouple (TC)			
• Temperature compensation			
- Parameterizable			Yes

Technical specifications (continued)

	6ES7134-6HB00-0DA1 AI 2xU/I 2-/4-wire HS	6ES7134-6HB00-0CA1 AI 2xU/I 2-/4-wire HF	6ES7134-6JF00-0CA1 AI 8xRTD/TC 2-wire HF
Resistance thermometer (RTD)			
• permissible input voltage for voltage input (destruction limit), max.			30 V
Cable length			
• Cable length, shielded, max.	200 m	1 000 m	200 m; 50 m with thermocouples
Analog value creation			
Integrations and conversion time/resolution per channel			
• Resolution with overrange (bit including sign), max.	16 bit	16 bit	16 bit
• Integration time, parameterizable		Yes	Yes
• Basic conversion time, including integration time, ms			
- Additional processing time for wire-break check			2 ms; In the ranges resistance thermometers, resistors and thermocouples
• Interference voltage suppression for interference frequency f1 in Hz	No	16.6 / 50 / 60 / 300 / 600 / 1.2 k / 2.4 k / 4.8 k	16.6 / 50 / 60 Hz
• Conversion time (per channel)	10 µs		180 / 60 / 50 ms
• Basic execution time of the module (all channels released)		1 ms	
Smoothing of measured values			
• Number of levels	7; none; 2-/4-/8-/16-/32-/64-fold	6; none; 2-/4-/8-/16-/32-fold	
• Parameterizable	Yes	Yes	Yes
Encoder			
Connection of signal encoders			
• for voltage measurement	Yes	Yes	Yes
• for current measurement as 2-wire transducer	Yes	Yes	
• Burden of 2-wire transmitter, max.	650 Ω	650 Ω	
• for current measurement as 4-wire transducer	Yes	Yes	
• for resistance measurement with 2-conductor connection			Yes
• for resistance measurement with 3-conductor connection			No
• for resistance measurement with 4-conductor connection			No
Errors/accuracies			
Basic error limit (operational limit at 25 °C)			
• Voltage, relative to input area, (+/-)	0.2 %	0.05 %; 0.1 % at SFU 4.8 kHz	0.05 %
• Current, relative to input area, (+/-)	0.2 %	0.05 %; 0.1 % at SFU 4.8 kHz	
• Resistance, relative to input area, (+/-)			0.05 %
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference frequency			
• Series mode interference (peak value of interference < rated value of input range), min.			70 dB
• common mode voltage, max.	35 V	35 V	10 V
• Common mode interference, min.	90 dB	90 dB	90 dB

Technical specifications (continued)

	6ES7134-6HB00-0DA1 AI 2xU/I 2-/4-wire HS	6ES7134-6HB00-0CA1 AI 2xU/I 2-/4-wire HF	6ES7134-6JF00-0CA1 AI 8xRTD/TC 2-wire HF
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	Yes	Yes	
Filtering and processing time (TCI), min.	130 µs	800 µs	
Bus cycle time (TDP), min.	250 µs	1 ms	
Interrupts/diagnostics/ status information			
Alarms			
• Diagnostic alarm	Yes	Yes	Yes
• Limit value alarm	Yes; two upper and two lower limit values in each case	Yes; two upper and two lower limit values in each case	Yes; two upper and two lower limit values in each case
Diagnostic messages			
• Diagnostics	Yes	Yes	Yes
• Monitoring the supply voltage	Yes	Yes	Yes
• Wire break	Yes; channel-by-channel, at 4 to 20 mA only	Yes; Measuring range 4 to 20 mA only	Yes
• Short circuit	Yes; channel-by-channel, at 1 to 5 V or for current measuring ranges short-circuit in encoder supply	Yes; For 1 to 5 V or for current measuring ranges short-circuit in encoder supply	
• Overflow/underflow	Yes	Yes	Yes
Diagnostics indication LED			
• Monitoring the supply voltage	Yes; green PWR LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics	Yes; Red LED	Yes; Red LED	Yes; Red LED
• for module diagnostics	Yes; green/red DIAG LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Galvanic isolation			
Electrical isolation channels			
• between the channels and the backplane bus	Yes	Yes	Yes
Isolation			
Isolation checked with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)
Ambient conditions			
Operating temperature			
• horizontal installation, min.	0 °C		0 °C
• horizontal installation, max.	60 °C		60 °C
• vertical installation, min.	0 °C		0 °C
• vertical installation, max.	50 °C		50 °C
Dimensions			
Width	15 mm	15 mm	15 mm
Weights			
Weight, approx.	32 g	32 g	

	6ES7134-6PA00-0BD0
General information	
Usable BaseUnits	BU type D0, BU20-P12+A0+0B
Product function	
• Voltage measurement	Yes
• Current measurement	Yes
• Energy measurement	Yes
• Frequency measurement	Yes
• Active power measurement	Yes
• Reactive power measurement	Yes
• I&M data	Yes
• Isochronous mode	No
Operating mode	
• Cyclic measurement	Yes
• Acyclic measurement	Yes

	6ES7134-6PA00-0BD0
Supply voltage	
Description	Supply via voltage measurement channel L1
Type of supply voltage	100 - 240 V AC
Relative symmetrical tolerance of the supply voltage	10 %
permissible range, lower limit (AC)	90 V
permissible range, upper limit (AC)	264 V
Power consumption without expansion module, typ.	0.6 V·A

Technical specifications (continued)

	6ES7134-6PA00-0BD0
Line frequency	
• permissible frequency range, lower limit	47 Hz
• permissible frequency range, upper limit	63 Hz
Address area	
Address space per module	
• Address space per module, max.	44 byte; 32 byte input / 12 byte output
Analog inputs	
Cycle time (all channels), typ.	50 ms
Analog value creation	
Integrations and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	24 bit; Sigma-delta converter, 1.024 MHz
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes
• Limit value alarm	No
Diagnostics indication LED	
• Monitoring the supply voltage	Yes
• Channel status display	Yes
• for channel diagnostics	Yes
• for module diagnostics	Yes
Integrated Functions	
Measuring functions	
• Buffering of measured variables	No
• Parameter length	44 byte
• Measuring procedure for voltage measurement	TRMS
• Measuring procedure for current measurement	TRMS
• Type of measured value acquisition	seamless
• Curve shape of voltage	Sinusoidal or distorted
• Operating mode for measured value acquisition	
- Automatic detection of line frequency	No; Parameterizable
- Fixation to 50 Hz	No; Default setting
- Fixation to 60 Hz	No
• Measuring range	
- Frequency measurement, min.	45 Hz
- Frequency measurement, max.	65 Hz
• Measuring inputs for voltage	
- Measurable line voltage between phase and neutral conductor	230 V
- Measurable line voltage between the line conductors	400 V
- Measurable line voltage between phase and neutral conductor, min.	90 V
- Measurable line voltage between phase and neutral conductor, max.	264 V
- Measurable line voltage between the line conductors, min.	155 V
- Measurable line voltage between the line conductors, max.	460 V
- Measurement category for voltage measurement	CAT III acc. to IEC 61010 Part 1
- Power consumption per phase	20 mW

	6ES7134-6PA00-0BD0
Measuring functions	
• Measuring inputs for current	
- Measurable relative current (AC), min.	5 %; Relative to the secondary rated current; 1 A, 5 A
- Measurable relative current (AC), max.	100 %; Relative to the secondary rated current; 1 A, 5 A
- Continuous current (AC), maximum permissible	5 A
- Apparent power consumption per phase for measuring range 5 A	0.6 V·A
- Rated value short-time withstand current restricted to 1 s	100 A
- Zero point suppression	50 mA
- Surge strength for 1 s	10 A; for 1 minute
• Meter uncertainties	
- Reference condition for measurement accuracy	Symmetric load, rated current: 20-100%, 50 Hz; active power: LF = 1, reactive power: LF = 0
- for measured variable voltage	±0.5%
- for measured variable current	±0.5%
- for measured variable power	±0.5%
- for measured variable active power	±0.5%
- for measured variable reactive power	±0.5%
- for measured variable total active energy	Class 1 acc. to IEC 62053-21:2003
- for measured variable total reactive energy	Class 2 acc. to IEC 62053-23:2003
Ambient conditions	
Mounting position	Horizontal, vertical
Dimensions	
Width	20 mm
Weights	
Weight (without packaging)	45 g
other	
Data for selecting a current transformer	
• Burden power current transformer x/1A, min.	1.25 V·A
• Burden power current transformer x/5A, min.	1.5 V·A
• Cable length (terminal-transformer) dependent on Zn and Imax	200 m

Ordering data

	Article No.
Analog input modules	
Analog input module AI 4xU/I 2-wire Standard, BU type A0 or A1, color code CC03, 16 bit, ± 0.3%	**6ES7134-6HD00-0BA1**
Analog input module AI 4xI 2-/4-wire Standard, BU type A0 or A1, color code CC03, 16 bit, ± 0.3%	**6ES7134-6GD00-0BA1**
Analog input module AI 4xRTD/TC 2-, 3-, 4-wire High Feature, BU type A0 or A1, color code CC00, 16 bit, ± 0.1%, scalable measuring range	**6ES7134-6JD00-0CA1**
Analog input module AI 2xU/I 2-/4-wire High Speed, BU type A0 or A1, color code CC00, 16 bit, ± 0.3%, isochronous mode above 250 µs, oversampling above 50 µs	**6ES7134-6HB00-0DA1**
Analog input module AI 8xRTD/TC 2-wire High Feature, BU type A0 or A1, color code CC00, 16 bit, ± 0.1%, scalable measuring range	**6ES7134-6JF00-0CA1**
Analog input module AI 2xU/I 2-/4-wire High Feature, BU type A0 or A1, color code CC05, 16 bit, ± 0.1%, independent channel isolation, isochronous mode above 1 ms	**6ES7134-6HB00-0CA1**
Analog input module AI Energy Meter Standard, BU type D0, color code CC00	**6ES7134-6PA00-0BD0**
Usable type A0 BaseUnits	
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	**6ES7193-6BP00-0DA0**
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	**6ES7193-6BP00-0BA0**
BU15-P16+A10+2D BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	**6ES7193-6BP20-0DA0**
BU15-P16+A10+2B BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	**6ES7193-6BP20-0BA0**
Usable type A1 BaseUnits (temperature detection)	
BU15-P16+A0+2D/T BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	**6ES7193-6BP00-0DA1**
BU15-P16+A0+2B/T BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	**6ES7193-6BP00-0BA1**
BU15-P16+A0+12D/T BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A)	**6ES7193-6BP40-0DA1**
BU15-P16+A0+12B/T BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	**6ES7193-6BP40-0BA1**
Usable type D0 BaseUnits	
BU20-P12+A0+0B BU type D0; BaseUnit with 12 push-in terminals, without AUX terminals, bridged to the left	**6ES7193-6BP00-0BD0**
Accessories	
Reference identification label 10 sheets of 16 labels	**6ES7193-6LF30-0AW0**
Labeling strips	
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	**6ES7193-6LA10-0AG0**
BU cover For covering empty slots (gaps); 5 units	
• 15 mm wide	**6ES7133-6CV15-1AM0**
• 20 mm wide	**6ES7133-6CV20-1AM0**
Shield connection 5 shield supports and 5 shield terminals	**6ES7193-6SC00-1AM0**
Color-coded labels	
• Color code CC03, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP03-2MA0**
• Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units	**6ES7193-6CP71-2AA0**
• Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units	**6ES7193-6CP72-2AA0**
• Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units	**6ES7193-6CP73-2AA0**
• Color code CC74, for 2x5 additional terminals, 5 x red, 5 x blue, for BU type A1, with push-in terminals; 10 units	**6ES7193-6CP74-2AA0**

Overview

- 2- and 4-channel analog output modules for the ET 200SP
- Can be plugged into Type A0 or A1 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
  - Plain text identification of the module type and function class
  - 2D matrix code (order and serial number)
  - Connection diagram
  - Color coding of the module type AQ: dark blue
  - Hardware and firmware version
  - Color code CC for module-specific color coding of the potentials at the terminals of the BU
  - Complete Article No.
- Optional labeling accessories
  - Labeling strips
  - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection

Technical specifications

	6ES7135-6HD00-0BA1 AQ 4xU/I ST	**6ES7135-6HB00-0DA1** AQ 2xU/I HS	**6ES7135-6HB00-0CA1** AQ 2xU/I HF
General information			
Product function			
• I&M data	Yes	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with			
• STEP 7 TIA Portal can be configured/integrated as of version		V12 SP1 / V13	V13 / V13
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision	GSD Revision 5	GSD Revision 5	GSD Revision 5
• PROFINET as of GSD version/GSD revision	V2.3 / -	GSDML V2.3	GSDML V2.3
Operating mode			
• Oversampling		Yes	
- Values per cycle max.		16	
- Resolution min.		250 µs	
CiR - Configuration in RUN			
Reparameterization possible in RUN	Yes	Yes	Yes
Calibration possible in RUN		Yes	Yes
Supply voltage			
Type of supply voltage	DC	DC	DC
Rated value (DC)	24 V	24 V	24 V
Reverse polarity protection	Yes		
Analog outputs			
Number of analog outputs	4	2	2
Cycle time (all channels), min.	5 ms	125 µs	750 µs
Output ranges, voltage			
• 0 to 10 V	Yes; 15 bit	Yes; 15 bit	Yes; 15 bit
• 1 to 5 V	Yes; 13 bit	Yes; 13 bit	Yes; 13 bit
• -5 to +5 V	Yes; 15 bit incl. sign	Yes; 15 bit incl. sign	Yes; 15 bit incl. sign
• -10 to +10 V	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
Output ranges, current			
• 0 to 20 mA	Yes; 15 bit	Yes; 15 bit	Yes; 15 bit
• -20 to +20 mA	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign	Yes; 16 bit incl. sign
• 4 to 20 mA	Yes; 14 bit	Yes; 14 bit	Yes; 14 bit

Technical specifications (continued)

	6ES7135-6HD00-0BA1 AQ 4xU/I ST	6ES7135-6HB00-0DA1 AQ 2xU/I HS	6ES7135-6HB00-0CA1 AQ 2xU/I HF
Connection of actuators			
• for voltage output 2-conductor connection	Yes	Yes	Yes
• for voltage output 4-conductor connection	Yes	Yes	Yes
• for current output 2-conductor connection	Yes	Yes	Yes
Load impedance (in rated range of output)			
• with voltage outputs, min.	2 kΩ	2 kΩ	2 kΩ
• with voltage outputs, capacitive load, max.	1 µF	1 µF	1 µF
• with current outputs, max.	500 Ω	500 Ω	500 Ω
• with current outputs, inductive load, max.	1 mH	1 mH	1 mH
Cable length			
• Cable length, shielded, max.	1 000 m	200 m	1 000 m
Analog value creation			
Settling time			
• for resistive load	0.1 ms	0.05 ms	0.05 ms
• for capacitive load	1 ms	0.05 ms	0.05 ms
• for inductive load	0.5 ms	0.05 ms	0.05 ms
Errors/accuracies			
Basic error limit (operational limit at 25 °C)			
• Voltage, relative to output area, (+/-)	0.3 %	0.1 %	0.1 %
• Current, relative to output area, (+/-)	0.3 %	0.1 %	0.1 %
Isochronous mode			
Isochronous operation (application synchronized up to terminal)		Yes	Yes
Execution and activation time (TCO), min.		130 µs	500 µs
Bus cycle time (TDP), min.		250 µs	750 µs
Interrupts/diagnostics/ status information			
Substitute values connectable	Yes	Yes	Yes
Alarms			
• Diagnostic alarm	Yes	Yes	Yes
Diagnostic messages			
• Diagnostics	Yes	Yes	Yes
• Monitoring the supply voltage	Yes	Yes	Yes
• Wire break	Yes	Yes; channel-by-channel, only for output type "current"	Yes; channel-by-channel, only for output type "current"
• Short circuit	Yes	Yes; channel-by-channel, only for output type "voltage"	Yes; channel-by-channel, only for output type "voltage"
• Overflow/underflow	Yes	Yes	Yes
Diagnostics indication LED			
• Monitoring the supply voltage	Yes; Green LED	Yes; green PWR LED	Yes; green PWR LED
• Channel status display	Yes; Green LED	Yes; Green LED	Yes; Green LED
• for channel diagnostics		Yes; Red LED	Yes; Red LED
• for module diagnostics	Yes; Green/red LED	Yes; green/red DIAG LED	Yes; green/red DIAG LED
Galvanic isolation			
Electrical isolation channels			
• between the channels and the backplane bus	Yes	Yes	Yes
Isolation			
Isolation checked with	707 V DC (type test)	707 V DC (type test)	707 V DC (type test)

Technical specifications (continued)

	6ES7135-6HD00-0BA1 AQ 4xU/I ST	6ES7135-6HB00-0DA1 AQ 2xU/I HS	6ES7135-6HB00-0CA1 AQ 2xU/I HF
Ambient conditions			
Operating temperature			
• horizontal installation, min.	0 °C	0 °C	
• horizontal installation, max.	60 °C	60 °C	
• vertical installation, min.	0 °C	0 °C	
• vertical installation, max.	50 °C	50 °C	
Dimensions			
Width	15 mm	15 mm	15 mm
Weights			
Weight, approx.	31 g	31 g	31 g

Ordering data

	Article No.
Analog output modules	
Analog output module AQ 4xU/I Standard, BU type A0 or A1, color code CC00, 16 bit, ± 0.3%	**6ES7135-6HD00-0BA1**
Analog output module AQ 2xU/I High Speed, BU type A0 or A1, color code CC00, 16 bit, ± 0.3%	**6ES7135-6HB00-0DA1**
Analog output module AQ 2xU/I High Feature, BU type A0 or A1, color code CC00, 16 bit, ± 0.1%	**6ES7135-6HB00-0CA1**
Usable type A0 BaseUnits	
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	**6ES7193-6BP00-0DA0**
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	**6ES7193-6BP00-0BA0**
BU15-P16+A10+2D BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	**6ES7193-6BP20-0DA0**
BU15-P16+A10+2B BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	**6ES7193-6BP20-0BA0**
Usable type A1 BaseUnits (temperature detection)	
BU15-P16+A0+2D/T BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	**6ES7193-6BP00-0DA1**
BU15-P16+A0+2B/T BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	**6ES7193-6BP00-0BA1**
BU15-P16+A0+12D/T BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A)	**6ES7193-6BP40-0DA1**
BU15-P16+A0+12B/T BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	**6ES7193-6BP40-0BA1**
Accessories	
Reference identification label 10 sheets of 16 labels	**6ES7193-6LF30-0AW0**
Labeling strips	
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	**6ES7193-6LA10-0AG0**
BU cover For covering empty slots (gaps); 5 units	
• 15 mm	**6ES7133-6CV15-1AM0**
• 20 mm	**6ES7133-6CV20-1AM0**
Shield connection 5 shield supports and 5 shield terminals	**6ES7193-6SC00-1AM0**
Color-coded labels	
• Color code CC71, for 10 AUX terminals, for BU type A0, with push-in terminals; 10 units	**6ES7193-6CP71-2AA0**
• Color code CC72, for 10 AUX terminals, for BU type A0, with push-in terminals; 10 units	**6ES7193-6CP72-2AA0**
• Color code CC73, for 10 AUX terminals, for BU type A0, with push-in terminals; 10 units	**6ES7193-6CP73-2AA0**
• Color code CC74, for 2x5 additional terminals, for BU type A1, with push-in terminals; 10 units	**6ES7193-6CP74-2AA0**

Overview

CM AS-i Master ST for SIMATIC ET 200SP

The CM AS-i Master ST communication module is designed for use in the SIMATIC ET 200SP distributed I/O system and has the following features:

- Connection of up to 62 AS-Interface slaves
- Support for all AS-Interface master functions according to AS-Interface Specification V3.0
- User-friendly configuration with graphic display of the AS-i line in TIA Portal V12.0 or in other systems using GSD
- Supply via AS-Interface cable
- Suitable for AS-i Power24V and for AS-Interface with 30 V voltage
- Integrated ground-fault monitoring for the AS-Interface cable
- Through connection to AS-Interface and in combination with ET 200SP, the number of digital inputs and outputs available for the control system is greatly increased (max. 496 DI/496 DO on the AS-Interface per CM AS-i Master ST).
- Integrated analog value processing (all analog profiles)

Basic unit: ET 200SP Distributed I/O System

SIMATIC ET 200SP is a scalable and highly flexible distributed I/O system for connecting the process signals to a central control system via PROFIBUS or PROFINET.

Up to eight CM AS-i Master STs can be plugged into a SIMATIC ET 200SP with the IM 155-6 PN standard interface module.

For further information,
see the "SIMATIC ET 200SP Distributed I/O" system manual
http://support.automation.siemens.com/WW/view/en/58649293.

Design

The CM AS-i Master ST module features a 20 mm wide ET 200SP module housing. A C0 type BaseUnit (BU) is required for use in the ET 200SP.

The module has LED indicators for diagnostics, operation, AS-i voltage and AS-i slave status and offers informative front-side module inscription for

- Plain-text marking of the module type and function class
- 2D matrix code (Article No. and serial number)
- Connection diagram
- Color coding of the CM module type: Light gray
- Hardware and firmware version
- Complete Article No.

Function

The CM AS-i Master ST supports all specified functions of AS-Interface Specification V3.0.

The input/output values of the digital AS-i slaves can be activated via the cyclic process image. The values of the analog AS-i slaves can be attained via data record transfer.

If required, master calls can be performed with the command interface, e.g. read/write parameters, read/write configuration.

Changeover of the operating mode, automatic application of the slave configuration and re-addressing of a connected AS-i slave can be implemented via the control panel of the CM AS-i Master ST in the TIA Portal.

Safety note

The use of this product requires suitable protective measures (including network segmentation for IT security) to ensure safe plant operation; see http://www.siemens.com/industrialsecurity.

Configuration

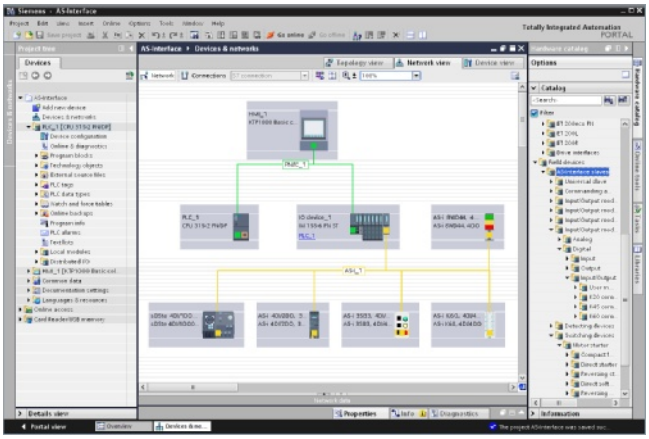
The following software is required for configuration of the CM AS-i Master ST module:

- STEP 7 (classic), V5.5 SP3 HF4 or higher with HSP 2092 or
- STEP 7 (TIA Portal), V12 or higher or
- the GSD file of the ET 200SP with STEP 7 or another engineering tool

The TIA Portal enables user-friendly configuration and diagnostics of the AS-i master and, in the event of interfacing to a SIMATIC S7-300/S7-400 station, any connected slaves.

Alternatively, you can also apply the AS-Interface ACTUAL configuration as the DESIRED configuration at the "touch of a button" via the control panel integrated in the TIA Portal or connection of an optional button. Configuration with the GSD file is possible only with the button.

Overview (continued)



Configuration of an AS-Interface network with CM AS-i Master ST via TIA Portal

The CM AS-i Master ST module occupies 32 input bytes and 32 output bytes in the I/O data of the ET 200SP station.

Benefits

The CM AS-i Master ST for ET 200SP communication module enables modular, simple and high-performance expansion of AS-Interface networks via engineering in the TIA Portal.

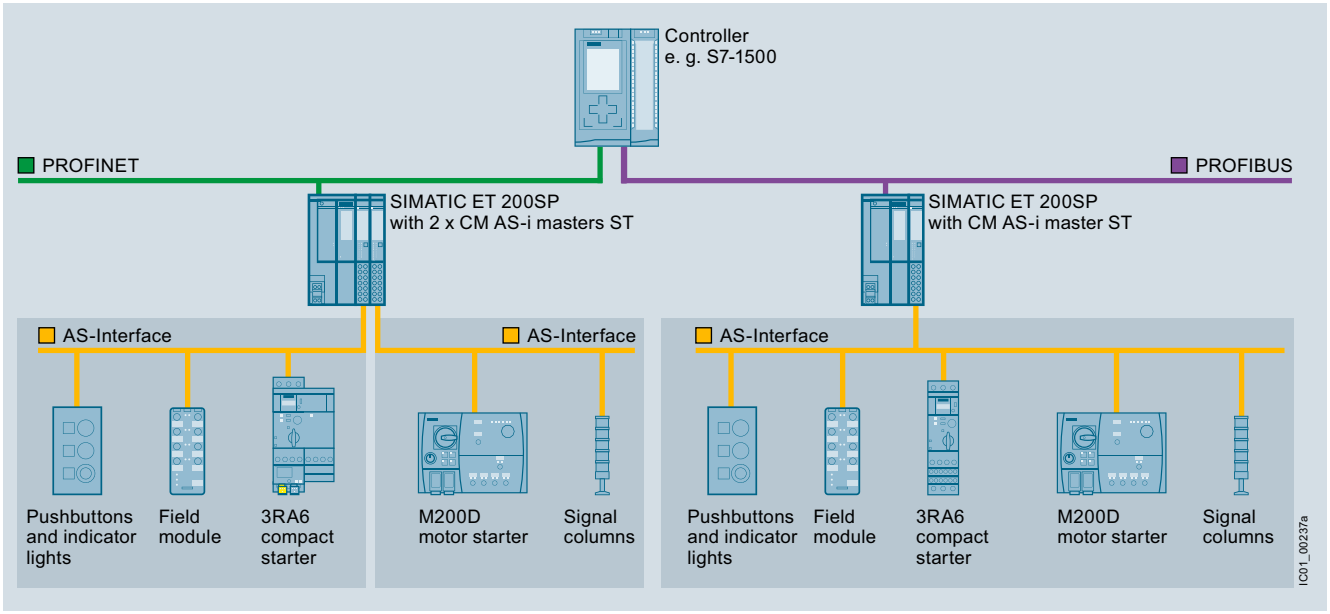
Up to eight CM AS-i Master ST units can be plugged into one ET 200SP station with IM 155-6 PN Standard. The maximum configuration depends on the interface module used.

Multiple masters as well as single masters can thus be implemented in the ET 200SP depending on the number of modules.

Together with the interface module, a scalable PROFINET/AS-i Link or PROFIBUS/AS-i Link can be assembled.

Application

Configuration examples of AS-Interface networks with CM AS-i Master ST for SIMATIC ET 200SP



Configuration of AS-Interface networks under a SIMATIC ET 200SP

9

Communication
CM AS-i Master ST for SIMATIC ET 200SP

Ordering data

	Article No.
CM AS-i Master ST communication module	**3RK7137-6SA00-0BC1**
• AS-Interface master for SIMATIC ET 200SP, for plugging onto BaseUnit Type C0	
• Corresponds to AS-Interface Specification V3.0	
• Dimensions (W x H x D / mm): 20 x 73 x 58	
Accessories	
BaseUnit BU20-P6+A2+4D	**6ES7193-6BP20-0DC0**
• BaseUnit (light), BU type C0	
• Suitable for the CM AS-i Master ST module	
• For connection of the AS-Interface cable to CM AS-i Master ST	
• For starting an AS-i network, isolation of the AS-i voltage to the left-hand module	
IM 155-6 PN Standard PROFINET interface module	
Max. 32 I/O modules, max. 256 bytes I/O data per station	
• Including server module and bus adapter 2 x RJ45 (supplied without RJ45 plug)	**6ES7155-6AA00-0BN0**
• Including server module (bus adapter to be ordered separately, see below)	**6ES7155-6AU00-0BN0**
IM 155-6 PN High Feature PROFINET interface module	
Max. 64 I/O modules, max. 1 440 bytes I/O data per station	
• Including server module (bus adapter to be ordered separately, see below)	**6ES7155-6AU00-0CN0**
IM 155-6 DP High Feature PROFIBUS interface module	
Max. 32 I/O modules, max. 244 bytes I/O data per station	
• Including server module and PROFIBUS connector	**6ES7155-6BA00-0CN0**
Bus adapter for PROFINET	
For connecting the Ethernet cable to the IM 155-6 PN PROFINET interface module	
• 2 x RJ45 connection (supplied without RJ45 plug)	**6ES7193-6AR00-0AA0**
• Connection 2 x FC (FastConnect)	**6ES7193-6AF00-0AA0**

More information

Manuals

See
http://support.automation.siemens.com/WW/view/en/71756485
for the "CM AS-i Master ST for SIMATIC ET 200SP" manual.

See
http://support.automation.siemens.com/WW/view/en/59753521
for the "SIMATIC ET 200SP BaseUnits" manual.

See
http://support.automation.siemens.com/WW/view/en/58649293
for the "SIMATIC ET 200SP Distributed I/O System" system manual.

Industry Mall

For further information, see
"Automation" → "Industrial communication" →
"AS-Interface" → "Master" → "Master for SIMATIC ET 200".

Overview

Technical properties

- ET 200SP counter module
- Interfaces:
  - 24 V encoder signals A, B and N from P, M or push-pull-switching encoders and sensors
  - 24 V encoder supply output, short-circuit-proof
  - 3 digital inputs for controlling the count operation, for saving or for setting the count value
  - 2 digital outputs for fast responses regardless of the counter status or the measured value
- Counting frequency 200 kHz (800 kHz with quadruple evaluation)
- Counting range + 31 bit
- Measurement function
- Process interrupts, parameterizable
- Parameterizable input filter for suppressing faults at encoder and digital inputs

Supported encoders/signal types

- 24 V incremental encoder with and without signal N
- 24 V pulse encoder with direction signal
- 24 V pulse encoder without direction signal
- 24 V pulse encoder for pulse up and down respectively

Supported system functions

- Isochronous mode
- Firmware update
- Identification data I&M

Technical specifications

	6ES7138-6AA00-0BA0 TM Count 1x24V
General information	
Usable BaseUnits	BU type A0
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal can be configured/integrated as of version	V13 / V13
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / V5.5 SP4
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	19.2 V
• permissible range, upper limit (DC)	28.8 V
• Reverse polarity protection	Yes
Input current	
Current consumption, max.	60 mA; without load
Encoder supply	
Number of outputs	1
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes
• Output current, max.	300 mA
Power losses	
Power loss, typ.	1 W
Digital inputs	
Number of digital inputs	3
Digital inputs, configurable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
• Gate start/stop	Yes
• Capture	Yes
• Synchronization	Yes
• Freely usable digital input	Yes
Input voltage	
• Rated value, DC	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	+11 to +30 V
• Permissible voltage at input, min.	-30 V
• Permissible voltage at input, max.	30 V
Input current	
• for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage)	
• for standard inputs	
- Parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
- at "0" to "1", min.	6 µs; for parameterization "none"
- at "1" to "0", min.	6 µs; for parameterization "none"
• for counter/technological functions	
- Parameterizable	Yes
Cable length	
• Cable length, shielded, max.	1 000 m
• Cable length unshielded, max.	600 m
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	2
Digital outputs, configurable	Yes
Short-circuit protection	Yes; electronic/thermal
• Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	L+ (-33 V)
Controlling a digital input	Yes
Digital output functions, parameterizable	
• Switching tripped by comparison values	Yes
• Freely usable digital output	Yes
Switching capacity of the outputs	
• with resistive load, max.	0.5 A; Per digital output
• on lamp load, max.	5 W
Load resistance range	
• lower limit	48 Ω
• upper limit	12 kΩ
Output voltage	
• for signal "1", min.	23.2 V; L+ (-0.8 V)

Technical specifications (continued)

	6ES7138-6AA00-0BA0 TM Count 1x24V
Output current	
• for signal "1" rated value	0.5 A; Per digital output
• for signal "1" permissible range, max.	0.6 A; Per digital output
• for signal "1" minimum load current	2 mA
• for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
• "0" to "1", max.	50 µs
• "1" to "0", max.	50 µs
Switching frequency	
• with resistive load, max.	10 kHz
• with inductive load, max.	0.5 Hz; Acc. to IEC 947-5-1, DC-13; observe derating curve
• on lamp load, max.	10 Hz
Aggregate current of the outputs	
• Max. current per module	1 A
Cable length	
• Cable length, shielded, max.	1 000 m
• Cable length unshielded, max.	600 m
Encoder	
Connectable encoders	
• 2-wire sensor	Yes
- Permissible quiescent current (2-wire sensor), max.	1.5 mA
Encoder signals, incremental encoder (asymmetrical)	
• Input voltage	24 V
• Input frequency, max.	200 kHz
• Counting frequency, max.	800 kHz; with quadruple evaluation
• Signal filter, can be parameterized	Yes
• Cable length, shielded, max.	600 m; depending on input frequency, encoder and cable quality; max. 50 m at 200 kHz
• Incremental encoder with A/B tracks, 90° out of phase	Yes
• Incremental encoder with A/B tracks, 90° out of phase and zero track	Yes
• Pulse encoder	Yes
• Pulse encoder with direction	Yes
• Pulse encoder with one impulse signal per count direction	Yes
• Encoder signal 24 V	
- Permissible voltage at input, min.	-30 V
- Permissible voltage at input, max.	30 V
Interface types	
• Input characteristic curve in accordance with IEC 61131, type 3	Yes
• m/p-reading	Yes
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
Interrupts/diagnostics/ status information	
Substitute values connectable	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	Yes

	6ES7138-6AA00-0BA0 TM Count 1x24V
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire break	Yes
• Short circuit	Yes
• A/B transition error at incremental encoder	Yes
• Group error	Yes
Diagnostics indication LED	
• Monitoring the supply voltage	Yes; green PWR LED
• for module diagnostics	Yes; green/red DIAG LED
• Status indicator backward counting (green)	Yes
• Status indicator forward counting (green)	Yes
Integrated Functions	
Number of counters	1
Counter frequency (counter) max.	800 kHz; with quadruple evaluation
Counting functions	
• Can be used with TO High_Speed_Counter	Yes
• Continuous counting	Yes
• Counter response can be parameterized	Yes
• Hardware gate via digital input	Yes
• Software gate	Yes
• Event-controlled stop	Yes
• Synchronization via digital input	Yes
• Counting range, parameterizable	Yes
• Comparator	
- Number of comparators	2
- Direction dependency	Yes
- Can be changed from user program	Yes
Position detection	
• Incremental acquisition	Yes
• Suitable for S7-1500 Motion Control	Yes
Measuring functions	
• Measuring time, parameterizable	Yes
• Dyn. measuring time adjustment	Yes
• Number of thresholds, parameterizable	2
• Measuring range	
- Frequency measurement, min.	0.04 Hz
- Frequency measurement, max.	800 kHz
- Period measurement, min.	1.25 µs
- Period measurement, max.	25 s
• Accuracy	
- Frequency measurement	100 ppm; depending on measuring interval and signal evaluation
- Speed measurement	100 ppm; depending on measuring interval and signal evaluation
- Cycle duration measurement	100 ppm; depending on measuring interval and signal evaluation

Technical specifications (continued)

	6ES7138-6AA00-0BA0 TM Count 1x24V
Galvanic isolation	
Electrical isolation channels	
• between the channels and the backplane bus	Yes
Permissible potential difference	
between different circuits	75 V DC/60 V AC (base isolation)
Isolation	
Isolation checked with	707 V DC (type test)
Dimensions	
Width	15 mm
Weights	
Weight, approx.	45 g

Ordering data

	Article No.
TM Count 1x24V counter module	
With one channel, max. 200 kHz; for 24 V encoder	**6ES7138-6AA00-0BA0**
Usable BaseUnits	
BU15-P16+A0+2D	**6ES7193-6BP00-0DA0**
BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	
BU15-P16+A0+2B	**6ES7193-6BP00-0BA0**
BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	
BU15-P16+A10+2D	**6ES7193-6BP20-0DA0**
BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	
BU15-P16+A10+2B	**6ES7193-6BP20-0BA0**
BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	
Accessories	
Reference identification label	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
Labeling strips	
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	**6ES7193-6LA10-0AG0**
BU cover	
For covering empty slots (gaps); 5 units	
• 15 mm wide	**6ES7133-6CV15-1AM0**
• 20 mm wide	**6ES7133-6CV20-1AM0**
Shield connection	**6ES7193-6SC00-1AM0**
5 shield supports and 5 shield terminals	
Color-coded labels	
• Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units	**6ES7193-6CP71-2AA0**
• Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units	**6ES7193-6CP72-2AA0**
• Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units	**6ES7193-6CP73-2AA0**

Technology modules – TM PosInput 1 counter and position recording module

Overview

Technical properties

- Counter and position recording module for ET 200SP
- Interfaces:
  - Encoder signals A, B and N for 5 V TTL or RS422 differential signals
  - SSI interface with clock and data for RS422 differential signals
  - 24 V encoder supply output, short-circuit proof
  - 2 digital inputs for controlling the counting process, for saving or setting the counter or position value
  - 2 digital outputs for fast reactions depending on the counter reading, position value or measured value
- Counter frequency 1 MHz (4 MHz with four-fold evaluation)
- Count range: +/- 31 bits
- Measurement function
- Parameterizable hardware interrupts
- Parameterizable input filters for suppressing interferences at sensor and digital inputs

Supported types of encoders/signals

- Incremental encoders with or without N signal
- Pulse encoders with directional signal
- Pulse encoders without directional signal
- Pulse encoders for forward or reverse pulses
- SSI encoders with a frame length of 10 to 40 bits, of which up to 31 bits position value

Supported system functions

- Isochronous mode
- Firmware update
- Identification data (I&M)

Technical specifications

	6ES7138-6BA00-0BA0 TM PosInput 1
General information	
Usable BaseUnits	BU type A0
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal can be configured/integrated as of version	V13 / V13
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / V5.5 SP4
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
• permissible range, lower limit (DC)	19.2 V
• permissible range, upper limit (DC)	28.8 V
• Reverse polarity protection	Yes
Input current	
Current consumption, max.	75 mA; without load
Encoder supply	
Number of outputs	1
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Short-circuit protection	Yes
• Output current, max.	300 mA
Power losses	
Power loss, typ.	1.9 W
Digital inputs	
Number of digital inputs	2
Digital inputs, configurable	Yes
Input characteristic curve in accordance with IEC 61131, type 3	Yes
Digital input functions, parameterizable	
• Gate start/stop	Yes; only for pulse and incremental encoders
• Capture	Yes
• Synchronization	Yes; only for pulse and incremental encoders
• Freely usable digital input	Yes
Input voltage	
• Rated value, DC	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	+11 to +30 V
• Permissible voltage at input, min.	-30 V
• Permissible voltage at input, max.	30 V
Input current	
• for signal "1", typ.	2.5 mA
Input delay (for rated value of input voltage)	
• for standard inputs	
- Parameterizable	Yes; none / 0.05 / 0.1 / 0.4 / 0.8 / 1.6 / 3.2 / 12.8 / 20 ms
- at "0" to "1", min.	6 µs; for parameterization "none"
- at "1" to "0", min.	6 µs; for parameterization "none"
• for counter/technological functions	
- Parameterizable	Yes

Technical specifications (continued)

	6ES7138-6BA00-0BA0 TM PosInput 1
Cable length	
• Cable length, shielded, max.	1 000 m
• Cable length unshielded, max.	600 m
Digital outputs	
Type of digital output	Transistor
Number of digital outputs	2
Digital outputs, configurable	Yes
Short-circuit protection	Yes; electronic/thermal
• Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	L+ (-33 V)
Controlling a digital input	Yes
Digital output functions, parameterizable	
• Switching tripped by comparison values	Yes
• Freely usable digital output	Yes
Switching capacity of the outputs	
• with resistive load, max.	0.5 A; Per digital output
• on lamp load, max.	5 W
Load resistance range	
• lower limit	48 Ω
• upper limit	12 kΩ
Output voltage	
• for signal "1", min.	23.2 V; L+ (-0.8 V)
Output current	
• for signal "1" rated value	0.5 A; Per digital output
• for signal "1" permissible range, max.	0.6 A; Per digital output
• for signal "1" minimum load current	2 mA
• for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
• "0" to "1", max.	50 µs
• "1" to "0", max.	50 µs
Switching frequency	
• with resistive load, max.	10 kHz
• with inductive load, max.	0.5 Hz; Acc. to IEC 947-5-1, DC-13; observe derating curve
• on lamp load, max.	10 Hz
Aggregate current of the outputs	
• Max. current per module	1 A
Cable length	
• Cable length, shielded, max.	1 000 m
• Cable length unshielded, max.	600 m
Encoder	
Encoder signals, incremental encoder (symmetrical)	
• Input voltage	RS 422
• Input frequency, max.	1 MHz
• Counting frequency, max.	4 MHz; with quadruple evaluation
• Signal filter, can be parameterized	Yes
• Cable length, shielded, max.	32 m; at 1 MHz
• Incremental encoder with A/B tracks, 90° out of phase	Yes
• Incremental encoder with A/B tracks, 90° out of phase and zero track	Yes
• Pulse encoder	Yes
• Pulse encoder with direction	Yes
• Pulse encoder with one impulse signal per count direction	Yes

	6ES7138-6BA00-0BA0 TM PosInput 1
Encoder signals, incremental encoder (asymmetrical)	
• Input voltage	5 V TTL (push-pull encoders only)
• Input frequency, max.	1 MHz
• Counting frequency, max.	4 MHz; with quadruple evaluation
• Signal filter, can be parameterized	Yes
• Incremental encoder with A/B tracks, 90° out of phase	Yes
• Incremental encoder with A/B tracks, 90° out of phase and zero track	Yes
• Pulse encoder	Yes
• Pulse encoder with direction	Yes
• Pulse encoder with one impulse signal per count direction	Yes
Encoder signals, absolute encoder (SSI)	
• Input signal	to RS-422
• Message frame length, parameterizable	10 ... 40 bit
• Clock frequency, max.	2 MHz; 125 kHz, 250 kHz, 500 kHz, 1 MHz, 1.5 MHz or 2 MHz
• Binary code	Yes
• Gray code	Yes
• Cable length, shielded, max.	320 m; Cable length, RS-422 SSI absolute encoders, Siemens type 6FX2001-5, 24 V supply: 125 kHz, 320 meters shielded, max.; 250 kHz, 160 meters shielded, max.; 500 kHz, 60 meters shielded, max.; 1 MHz, 20 meters shielded, max. 1.5 MHz, 10 meters shielded, max.; 2 MHz, 8 meters shielded, max.
• Parity bit, parameterizable	Yes
• Monoflop time	16, 32, 48, 64 µs & automatic
• Multiturn	Yes
• Singleturn	Yes
Interface types	
• RS422	Yes
• TTL 5 V	Yes
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
Interrupts/diagnostics/ status information	
Substitute values connectable	Yes; Parameterizable
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	Yes
Diagnostic messages	
• Monitoring the supply voltage	Yes
• Wire break	Yes
• Short circuit	Yes
• A/B transition error at incremental encoder	Yes
• Frame error at SSI encoder	Yes
• Group error	Yes
Diagnostics indication LED	
• Monitoring the supply voltage	Yes; green PWR LED
• for module diagnostics	Yes; green/red DIAG LED
• Status indicator backward counting (green)	Yes
• Status indicator forward counting (green)	Yes

Technology modules – TM PosInput 1 counter and position recording module

Technical specifications (continued)

	6ES7138-6BA00-0BA0 TM PosInput 1
Integrated Functions	
Number of counters	1
Counter frequency (counter) max.	4 MHz; with quadruple evaluation
Counting functions	
• Can be used with TO High_Speed_Counter	Yes; only for pulse and incremental encoders
• Continuous counting	Yes
• Counter response can be parameterized	Yes
• Hardware gate via digital input	Yes
• Software gate	Yes
• Event-controlled stop	Yes
• Synchronization via digital input	Yes
• Counting range, parameterizable	Yes
• Comparator	
- Number of comparators	2
- Direction dependency	Yes
- Can be changed from user program	Yes
Position detection	
• Incremental acquisition	Yes
• Absolute acquisition	Yes
• Suitable for S7-1500 Motion Control	Yes
Measuring functions	
• Measuring time, parameterizable	Yes
• Dyn. measuring time adjustment	Yes
• Number of thresholds, parameterizable	2
• Measuring range	
- Frequency measurement, min.	0.04 Hz
- Frequency measurement, max.	4 MHz
- Period measurement, min.	0.25 µs
- Period measurement, max.	25 s
• Accuracy	
- Frequency measurement	100 ppm; depending on measuring interval and signal evaluation
- Speed measurement	100 ppm; depending on measuring interval and signal evaluation
- Cycle duration measurement	100 ppm; depending on measuring interval and signal evaluation
Galvanic isolation	
Electrical isolation channels	
• between the channels and the backplane bus	Yes
Permissible potential difference	
between different circuits	75 V DC/60 V AC (base isolation)
Isolation	
Isolation checked with	707 V DC (type test)
Ambient conditions	
Operating temperature	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C; Observe derating
• vertical installation, min.	0 °C
• vertical installation, max.	50 °C; Observe derating
Dimensions	
Width	15 mm
Weights	
Weight, approx.	45 g

Ordering data

	Article No.
TM PosInput 1 counter and positioning recording module	
With one channel, max. 1 MHz for 5 V TTL or RS422 differential signals or SSI absolute encoder	**6ES7138-6BA00-0BA0**
Usable BaseUnits	
BU15-P16+A0+2D	**6ES7193-6BP00-0DA0**
BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	
BU15-P16+A0+2B	**6ES7193-6BP00-0BA0**
BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	
BU15-P16+A10+2D	**6ES7193-6BP20-0DA0**
BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	
BU15-P16+A10+2B	**6ES7193-6BP20-0BA0**
BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	
Accessories	
Reference identification label	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
Labeling strips	
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	**6ES7193-6LA10-0AG0**
BU cover	
For covering empty slots (gaps); 5 units	
• 15 mm wide	**6ES7133-6CV15-1AM0**
• 20 mm wide	**6ES7133-6CV20-1AM0**
Shield connection	**6ES7193-6SC00-1AM0**
5 shield supports and 5 shield terminals	
Color-coded labels	
• Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units	**6ES7193-6CP71-2AA0**
• Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units	**6ES7193-6CP72-2AA0**
• Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units	**6ES7193-6CP73-2AA0**

Overview

Digital fail-safe input module:
F-DI 8x24 V DC High Feature for BU type A0, color code CC01

Other properties:

- 8-channel digital fail-safe input module for the ET 200SP
- For fail-safe reading of sensor information (1 or 2 channels)
- Provides integral discrepancy evaluation for 2-out-of-2 signals
- 8 internal sensor supplies (incl. test function) onboard
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Can be plugged into type A0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
  - Plain text identification of the module type and function class
  - 2D matrix code (order and serial number)
  - Connection diagram
  - Color coding of the module type DI: White
  - Hardware and firmware version
  - Color code CC for module-specific color coding of the potentials at the terminals of the BU
  - Complete article No.
- Optional labeling accessories
  - Labeling strips
  - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFIsafe, both in PROFIBUS, and in PROFINET configurations. They can be used with all fail-safe SIMATIC S7 CPUs.

Technical specifications

	6ES7136-6BA00-0CA0 F-DI 8x24VDC HF
General information	
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal can be configured/integrated as of version	V12
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -
• PROFINET as of GSD version/GSD revision	V2.31
Supply voltage	
Type of supply voltage	24 V DC
Rated value (DC)	24 V
Reverse polarity protection	Yes
Encoder supply	
Number of outputs	8
Short-circuit protection	Yes; Electronic (response threshold 0.7 A to 1.8 A)
Output current	
• up to 60 °C, max.	0.3 A
24 V encoder supply	
• 24 V	Yes; min. L+ (-1.5 V)
• Short-circuit protection	Yes
• Output current, max.	800 mA

	6ES7136-6BA00-0CA0 F-DI 8x24VDC HF
Digital inputs	
Number of digital inputs	8
m/p-reading	Yes; p-reading
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Input voltage	
• Type of input voltage	DC
• Rated value, DC	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	+15 V to +30 V
Input current	
• for signal "1", typ.	3.7 mA
Input delay (for rated value of input voltage)	
• for standard inputs	
- Parameterizable	Yes
• for counter/technological functions	
- Parameterizable	No
Cable length	
• Cable length, shielded, max.	1 000 m
• Cable length unshielded, max.	500 m
Interrupts/diagnostics/ status information	
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• Monitoring the supply voltage	Yes; green PWR LED
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; green/red DIAG LED
Galvanic isolation	
Electrical isolation channels	
• between the channels and the backplane bus	Yes
Isolation	
Isolation checked with	707 V DC (type test)
Standards, approvals, certificates	
Suitable for safety functions	Yes
Highest safety class achievable in safety mode	
• Performance level according to EN ISO 13849-1:2008	PLe
• SIL according to IEC 61508:2010	SIL 3
• Low demand (PFD) acc. to SIL3	< 2.00E-05 1/h
• High demand (PFH) acc. to SIL3	< 1.00E-09 1/h
Ambient conditions	
Operating temperature	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	50 °C
Dimensions	
Width	15 mm
Weights	
Weight, approx.	49 g

Fail-safe I/O modules
Digital F input modules

Ordering data

	Article No.
Digital F input modules	
F-DI 8x24 V DC High Feature, BU type A0, color code CC01	**6ES7136-6BA00-0CA0**
Usable BaseUnits	
BU15-P16+A0+2D	**6ES7193-6BP00-0DA0**
BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	
BU15-P16+A0+2B	**6ES7193-6BP00-0BA0**
BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	
BU15-P16+A10+2D	**6ES7193-6BP20-0DA0**
BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	
BU15-P16+A10+2B	**6ES7193-6BP20-0BA0**
BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	
Accessories	
S7 Distributed Safety programming tool V5.4	
Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400 F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 V5.3 SP3 and higher	
Floating license for 1 user	**6ES7833-1FC02-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FC02-0YH5**
STEP 7 Safety Advanced V13	
Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13	
Floating license for 1 user	**6ES7833-1FA13-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FA13-0YH5**

	Article No.
Reference identification label	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
Labeling strips	
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	**6ES7193-6LA10-0AG0**
BU cover	
For covering empty slots (gaps); 5 units	
• 15 mm wide	**6ES7133-6CV15-1AM0**
• 20 mm wide	**6ES7133-6CV20-1AM0**
Shield connection	**6ES7193-6SC00-1AM0**
5 shield supports and 5 shield terminals	
Color-coding plates	
• Color code CC01, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP01-2MA0**
• Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units	**6ES7193-6CP71-2AA0**
• Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units	**6ES7193-6CP72-2AA0**
• Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units	**6ES7193-6CP73-2AA0**

[1] For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

Overview

Digital fail-safe output module:
F-DQ 4x24 V DC High Feature, BU type A0, color code CC01

Other properties:

- 4-channel digital fail-safe output module for the ET 200SP
- Fail-safe 2-channel activation (sink/source output) by actuators
- Actuators can be controlled up to 2 A
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Can be plugged into type A0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
  - Plain text identification of the module type and function class
  - 2D matrix code (order and serial number)
  - Connection diagram
  - Color coding of the module type DI: White
  - Hardware and firmware version
  - Color code CC for module-specific color coding of the potentials at the terminals of the BU
  - Complete article No.
- Optional labeling accessories
  - Labeling strips
  - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFIsafe, both in PROFIBUS, and in PROFINET configurations.
- They can be used with all fail-safe SIMATIC S7 CPUs.

Technical specifications

	6ES7136-6DB00-0CA0 F-DQ 4x24VDC HF
General information	
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal can be configured/integrated as of version	V12
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -
• PROFINET as of GSD version/GSD revision	V2.31
Supply voltage	
Type of supply voltage	24 V DC
Rated value (DC)	24 V
Reverse polarity protection	Yes
Digital outputs	
Number of digital outputs	4
Digital outputs, configurable	Yes
Short-circuit protection	Yes
Open-circuit detection	Yes
Overload protection	Yes
Limitation of inductive shutdown voltage to	typ. 2*47V
Switching capacity of the outputs	
• with resistive load, max.	2 A
• on lamp load, max.	10 W
Load resistance range	
• lower limit	12 Ω
• upper limit	2 000 Ω
Output voltage	
• Type of output voltage	DC
• for signal "1", min.	24 V; L+ (-0.5 V)
Output current	
• for signal "1" rated value	2 A
• for signal "0" residual current, max.	0.5 mA
Switching frequency	
• with resistive load, max.	30 Hz; Symmetrical
• with inductive load, max.	0.1 Hz; according to IEC 947-5-1, DC-13, symmetrical
• on lamp load, max.	10 Hz; Symmetrical
Aggregate current of the outputs	
• Max. current per channel	2 A; Note derating data in the manual
• Max. current per module	6 A; Note derating data in the manual
Cable length	
• Cable length, shielded, max.	1 000 m
• Cable length unshielded, max.	500 m
Interrupts/diagnostics/ status information	
Substitute values connectable	No
Alarms	
• Diagnostic alarm	Yes
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• Monitoring the supply voltage	Yes; green PWR LED
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; green/red DIAG LED
Galvanic isolation	
Electrical isolation channels	
• between the channels and the backplane bus	Yes
Isolation	
Isolation checked with	707 V DC (type test)
Standards, approvals, certificates	
Suitable for safety functions	Yes
Highest safety class achievable in safety mode	
• Performance level according to EN ISO 13849-1:2008	PLe
• SIL according to IEC 61508:2010	SIL 3
• Low demand (PFD) acc. to SIL3	< 2.00E-05 1/h
• High demand (PFH) acc. to SIL3	< 1.00E-09 1/h
Ambient conditions	
Operating temperature	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	50 °C
Dimensions	
Width	15 mm
Weights	
Weight, approx.	57 g

Ordering data

	Article No.
Digital F output modules	
F-DQ 4x24 V DC High Feature, BU type A0, color code CC01	**6ES7136-6DB00-0CA0**
Usable BaseUnits	
BU15-P16+A0+2D	**6ES7193-6BP00-0DA0**
BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	
BU15-P16+A0+2B	**6ES7193-6BP00-0BA0**
BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	
BU15-P16+A10+2D	**6ES7193-6BP20-0DA0**
BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	
BU15-P16+A10+2B	**6ES7193-6BP20-0BA0**
BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	
BU20-P12+A4+0B	**6ES7193-6BP20-0BB0**
BU type B0; BaseUnit (dark) with 12 process terminals (1...12) to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the load group	
Accessories	
S7 Distributed Safety programming tool V5.4	
Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 V5.3 SP3 and higher	
Floating license for 1 user	**6ES7833-1FC02-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FC02-0YH5**
STEP 7 Safety Advanced V13	
Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13	
Floating license for 1 user	**6ES7833-1FA13-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FA13-0YH5**

	Article No.
Reference identification label	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
Labeling strips	
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	**6ES7193-6LA10-0AG0**
BU cover	
For covering empty slots (gaps); 5 units	
• 15 mm wide	**6ES7133-6CV15-1AM0**
• 20 mm wide	**6ES7133-6CV20-1AM0**
Shield connection	**6ES7193-6SC00-1AM0**
5 shield supports and 5 shield terminals	
Color-coding plates	
• Color code CC02, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP02-2MA0**
• Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units	**6ES7193-6CP71-2AA0**
• Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units	**6ES7193-6CP72-2AA0**
• Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units	**6ES7193-6CP73-2AA0**

[1] For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

Overview

The digital F electronic module relay 1 F-RQ 24 V DC/ 24...230 V AC/5 A has the following characteristics:

- 1 relay output (2 NO contacts)
- Total output current 5 A
- Rated load voltage 24 V DC and 24...230 V AC
- The control circuit of the two safety relays must be routed from the outside to the respective terminals.

The attainable safety integrity level is SIL3 (IEC61508) when the control of the F-RQ module is implemented via a fail-safe output (e.g. ET 200SP 4F-DQ 24 V DC/2 A PROFIsafe).

Technical specifications

	6ES7136-6RA00-0BF0 F-RQ 1x24VDC/24 ... 230VAC/5A
General information	
Product function	
• I&M data	Yes; I&M0 to I&M3
Supply voltage	
Type of supply voltage	24 V DC
Rated value (DC)	24 V
Digital outputs	
Number of digital outputs	1
Controlling a digital input	Yes
Switching capacity of the outputs	
• with resistive load, max.	5 A
• on lamp load, max.	25 W
Switching frequency	
• with resistive load, max.	2 Hz
• with inductive load, max.	0.1 Hz
Total current of the outputs (per module)	
• horizontal installation	
- up to 40 °C, max.	5 A
- up to 50 °C, max.	4 A
- up to 60 °C, max.	3 A
• vertical installation	
- up to 50 °C, max.	3 A
Relay outputs	
• Number of relay outputs	1
• Rated input voltage of relay coil L+ (DC)	24 V
• Current consumption of relays (coil current of all relays), max.	70 mA
• Relay approved acc. to UL 508	Yes
• Switching capacity of contacts	
- with inductive load, max.	see additional description in the manual
- with resistive load, max.	see additional description in the manual
- Thermal continuous current, max.	5 A
- rated switching voltage (DC)	24 V
- rated switching voltage (AC)	230 V
Cable length	
• Cable length, shielded, max.	500 m
• Cable length unshielded, max.	300 m
• Control cable (input), max.	10 m
Interrupts/diagnostics/ status information	
Diagnostics indication LED	
• RUN LED	Yes
• Channel status display	Yes; Green LED
Galvanic isolation	
Electrical isolation channels	
• between the channels and the backplane bus	Yes
Isolation	
Overvoltage category	III
Standards, approvals, certificates	
Suitable for safety functions	Yes
Highest safety class achievable in safety mode	
• Performance level according to EN ISO 13849-1:2008	PLe
• Category according to ISO 13849-1:2008	4
• SIL according to IEC 61508:2010	SIL 3
Dimensions	
Width	20 mm
Weights	
Weight, approx.	56 g

Fail-safe I/O modules
Digital F output module relay

Ordering data

	Article No.
Digital F output module relay 1 F-RQ	
BU type F0, relay output (2 NO contacts), total output current 5 A, load voltages 24 V DC and 24...230 V AC; can be used up to SIL3 / Category 4/ PLe if controlled via F-DQ	**6ES7136-6RA00-0BF0**
Usable BaseUnits	
BU20-P8+A4+0B	**6ES7193-6BP20-0BF0**
BU type F0; BaseUnit (dark) with 8 process terminals to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the load group	
Accessories	
S7 Distributed Safety programming tool V5.4	
Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 V5.3 SP3 and higher	
Floating license for 1 user	**6ES7833-1FC02-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FC02-0YH5**
STEP 7 Safety Advanced V13	
Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET 200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13	
Floating license for 1 user	**6ES7833-1FA13-0YA5**
Floating license for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7833-1FA13-0YH5**

	Article No.
Reference identification label	**6ES7193-6LF30-0AW0**
10 sheets of 16 labels	
Labeling strips	
500 labeling strips on roll, light gray	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow	**6ES7193-6LA10-0AG0**
BU cover	**6ES7133-6CV15-1AM0**
For covering empty slots (gaps); 5 units • 20 mm wide	
Shield connection	**6ES7193-6SC00-1AM0**
5 shield supports and 5 shield terminals	

[1] For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

Overview

Digital fail-safe power module:
F-PM-E PPM 24 V DC/8 A for BU type C0, color code CC52

Other properties:

- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- Safety-related shutdown of output modules within the potential group of the F-PM-E
- Two fail-safe digital inputs, for reading of sensor information (1 or 2 channels)
- One fail-safe digital output onboard (ppm switching, up to 2 A, up to SIL 3/PL e)
- Fail-safe digital output and potential supply pp or pm switching can be parameterized
- Parameterizable onboard evaluation of the fail-safe inputs for control of the fail-safe digital outputs and of the potential group
- Digital standard output modules can be shut down up to PL d (ISO 13849) and SIL 2 (IEC61508) (up to 8 A).
- Can be plugged into type C0 BaseUnits (BU) with automatic coding
- LED display for error, operation, supply voltage and status
- Clear labeling on front of module
  - Plain text identification of the module type and function class
  - 2D matrix code (order and serial number)
  - Connection diagram
  - Color coding of the module type DI: White
  - Hardware and firmware version
  - Color code CC for module-specific color coding of the potentials at the terminals of the BU
  - Complete article No.
- Optional labeling accessories
  - Labeling strips
  - Reference identification label
- Optional module-specific color identification of the terminals according to the color code CC
- Optional system-integrated shield connection
- The modules support PROFIsafe in both PROFIBUS and PROFINET configurations. They can be used with all fail-safe SIMATIC S7 CPUs.

Technical specifications

	6ES7136-6PA00-0BC0 F-PM-E PPM 24VDC
General information	
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal can be configured/integrated as of version	V12
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision	V2.3
• PROFINET as of GSD version/GSD revision	V2.31
Supply voltage	
Type of supply voltage	24 V DC
Rated value (DC)	24 V
Reverse polarity protection	Yes
Input voltage	
• Type of input voltage	DC
Output voltage	
Type of output voltage	DC
Encoder supply	
Number of outputs	2
Short-circuit protection	Yes; Electronic (response threshold 0.7 A to 2.1 A)
Output current	
• up to 60 °C, max.	0.3 A
24 V encoder supply	
• 24 V	Yes; min. L+ (-1.5 V)
• Short-circuit protection	Yes
• Output current, max.	600 mA
Digital inputs	
Number of digital inputs	2
m/p-reading	Yes; p-reading
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Input voltage	
• Type of input voltage	DC
• Rated value, DC	24 V
• for signal "0"	-30 to +5 V
• for signal "1"	+15 V to +30 V
Input current	
• for signal "1", typ.	3.7 mA
Input delay (for rated value of input voltage)	
• for standard inputs	
- Parameterizable	Yes
• for counter/technological functions	
- Parameterizable	No
Cable length	
• Cable length, shielded, max.	1 000 m
• Cable length unshielded, max.	500 m

Technical specifications (continued)

	6ES7136-6PA00-0BC0 F-PM-E PPM 24VDC
Digital outputs	
Number of digital outputs	1
Digital outputs, configurable	Yes
Short-circuit protection	Yes
Open-circuit detection	Yes
Overload protection	Yes
Limitation of inductive shutdown voltage to	max. 1.5 V
Switching capacity of the outputs	
• with resistive load, max.	8 A
• on lamp load, max.	100 W
Load resistance range	
• lower limit	3 Ω
• upper limit	2 000 Ω
Output voltage	
• for signal "1", min.	24 V; L+ (-0.5 V)
Output current	
• for signal "1" rated value	8 A
• for signal "0" residual current, max.	1.5 mA; PP-switching: max. 1.5 mA; PM-switching: max. 1 mA
Switching frequency	
• with resistive load, max.	10 Hz; Symmetrical
• with inductive load, max.	0.1 Hz; according to IEC 947-5-1, DC-13, symmetrical
• on lamp load, max.	4 Hz; Symmetrical
Aggregate current of the outputs	
• Max. current per channel	8 A; Note derating data in the manual
• Max. current per module	8 A; Note derating data in the manual
Cable length	
• Cable length, shielded, max.	1 000 m
• Cable length unshielded, max.	500 m

	6ES7136-6PA00-0BC0 F-PM-E PPM 24VDC
Interrupts/diagnostics/ status information	
Substitute values connectable	No
Alarms	
• Diagnostic alarm	Yes
• Hardware interrupt	No
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• Monitoring the supply voltage	Yes; green PWR LED
• Channel status display	Yes; Green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; green/red DIAG LED
Galvanic isolation	
Electrical isolation channels	
• between the channels and the backplane bus	Yes
Isolation	
Isolation checked with	707 V DC (type test)
Standards, approvals, certificates	
Suitable for safety functions	Yes
Highest safety class achievable in safety mode	
• Performance level according to EN ISO 13849-1:2008	PLe
• SIL according to IEC 61508:2010	SIL 3
• Low demand (PFD) acc. to SIL3	< 2.00E-05 1/h
• High demand (PFH) acc. to SIL3	< 1.00E-09 1/h
Dimensions	
Width	20 mm
Height	72 mm
Depth	55 mm
Weights	
Weight, approx.	70 g

Ordering data

	Article No.
Digital F power module F-PM-E 24 V DC/8 A PPM Standard BU type C0, color code CC52. 2 inputs, 1 output, SIL3/Cat.4/PLe	**6ES7136-6PA00-0BC0**
Type C0 BaseUnits	
BU20-P6+A2+4D BU type C0; BaseUnit (light) with 6 push-in terminals (1...6) to the module and an additional 2 AUX terminals; new load group	**6ES7193-6BP20-0DC0**

	Article No.
Accessories	
Reference identification label 10 sheets of 16 labels	**6ES7193-6LF30-0AW0**
Labeling strips 1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	**6ES7193-6LA10-0AG0**
BU cover For covering empty slots (gaps); 5 units	
• 20 mm wide	**6ES7133-6CV20-1AM0**
Shield connection 5 shield supports and 5 shield terminals	**6ES7193-6SC00-1AM0**
Color-coding plates	
• Color code CC52, module-specific, for 8 push-in terminals; 10 units	**6ES7193-6CP52-2MC0**

Overview

F-CM AS-i Safety ST for SIMATIC ET 200SP

The F-CM AS-i Safety ST fail-safe communication module supplements an AS-Interface network without additional wiring to produce a safety-related AS-i network.

Important features:

- Fail-safe communication module for the ET 200SP
  - 31 fail-safe input channels in the process image
  - 16 fail-safe output channels in the process image
  - Certified up to SIL 3 (IEC 62061/IEC 61508), PL e (EN ISO 13849-1)
  - Parameterization conforms with other fail-safe I/O modules of the ET 200SP
- The communication module supports PROFIsafe in PROFINET configurations. Suitable for use with fail-safe SIMATIC S7-300F/S7-416F CPUs.
- For reading up to 31 fail-safe AS-i input slaves
  - 2 sensor inputs/signals for each fail-safe AS-i input slave
  - Adjustable evaluation of sensor signals: 2-channel or 2 x 1-channel
  - Integrated discrepancy evaluation in the case of 2-channel signals
  - Integrated AND operation in the case of 2 x 1-channel signals
  - Input delay can be parameterized
  - Start-up test can be set
  - Sequence monitoring can be activated
- For control of up to 16 fail-safe AS-i output circuit groups
  - The output circuit groups are controlled independently of one another.
  - One output circuit group can act on one or more actuators (e.g. to switch drives simultaneously).
  - An actuator (e.g. a contactor) is interfaced via a fail-safe AS-i output module (e.g. safe SlimLine module S45F, Article No. 3RK1405-1SE15-0AA2).
  - Simple fault acknowledgment via the process image
- Simple module replacement thanks to automatic importing of the safety parameters from the coding element
- Comprehensive diagnostic options
- Can be plugged onto type C1 or type C0 BaseUnits (BU)
- Supply via AS-Interface voltage
- 8 LED indicators for diagnostics, operating state, fault indication and supply voltage
- Informative front-side module inscription
  - Plain-text marking of the module type and function class
  - 2D matrix code (Article no. and serial number)
  - Connection diagram
  - Color coding of the CM module type: light gray
  - Hardware and firmware version
  - Complete Article No.
- Optional labeling accessories
  - Labeling strips
  - Reference identification label

Design

The fail-safe F-CM AS-i Safety ST master has an ET 200SP module enclosure with a width of 20 mm.

One AS-i master according to the AS-i Specification V3.0 and fail-safe AS-i input slaves and/or fail-safe AS-i output modules are needed for operation. The CM AS-i Master ST communication module (Article No. 3RK7137-6SA00-0BC1) is recommended as the AS-i master for the ET 200SP.

SIMATIC AS-i F-Link

Simple combination of the CM AS-i Master ST and F-CM AS-i Safety ST modules in one ET 200SP station with PROFINET interfacing results in a powerful PN/AS-i F-Link, which can be expanded further in a modular fashion.

SIMATIC AS-i F-Link: combination of an ET 200SP interface module, CM AS-i Master ST and F-CM AS-i Safety ST

With the digital and analog I/O modules of the ET 200SP, local inputs and outputs can be realized in the SIMATIC AS-i F-Link so as to ensure that the F-Link complies precisely with customer requirements. Expansion variants for almost every application are possible thanks to the selection of standard and fail-safe I/O modules.

Besides the single AS-i master, double, triple or generally multiple masters can be realized with or without fail-safe functionality.

Supported BaseUnits

With the recommended combination of the CM AS-i Master ST and F-CM AS-i Safety ST modules, the CM module is plugged onto a light type C0 BaseUnit and, directly on the right of it, the F-CM module is plugged onto a dark type C1 BaseUnit. The AS-i cable is connected only on the light BaseUnit of the CM module.

If the F-CM AS-i Safety ST module is not combined with the CM AS-i Master ST module, but another AS-i master is used instead, then the F-CM module is plugged onto a light type C0 BaseUnit. In this case, the AS-i cable is connected on the light BaseUnit of the F-CM module.

Overview (continued)

Safety note

The use of this product requires suitable protective measures (including network segmentation for IT security) in order to ensure safe plant operation; see http://www.siemens.com/industrialsecurity.

Configuration

The following software is required for configuration of the F-CM AS-i Safety ST module:

- STEP 7 (classic), V5.5 SP3 HF4 or higher with HSP 2093 and Distributed Safety V5.4 SP5 or F-Configuration Pack SP11

Configuration and programming are done entirely in the STEP 7 user interface. No additional configuration software is needed for commissioning.

Data management – together with all other configuration data of the SIMATIC – is realized completely in the S7 project.

The input and output channels are assigned to the process image automatically and manual linking via configuration function blocks is not necessary.

If the F-CM AS-i Safety ST module is replaced, all necessary settings are automatically imported into the new module.

The F-CM AS-i Safety ST module occupies 16 input bytes and 8 output bytes in the I/O data of the ET 200SP station.

Application

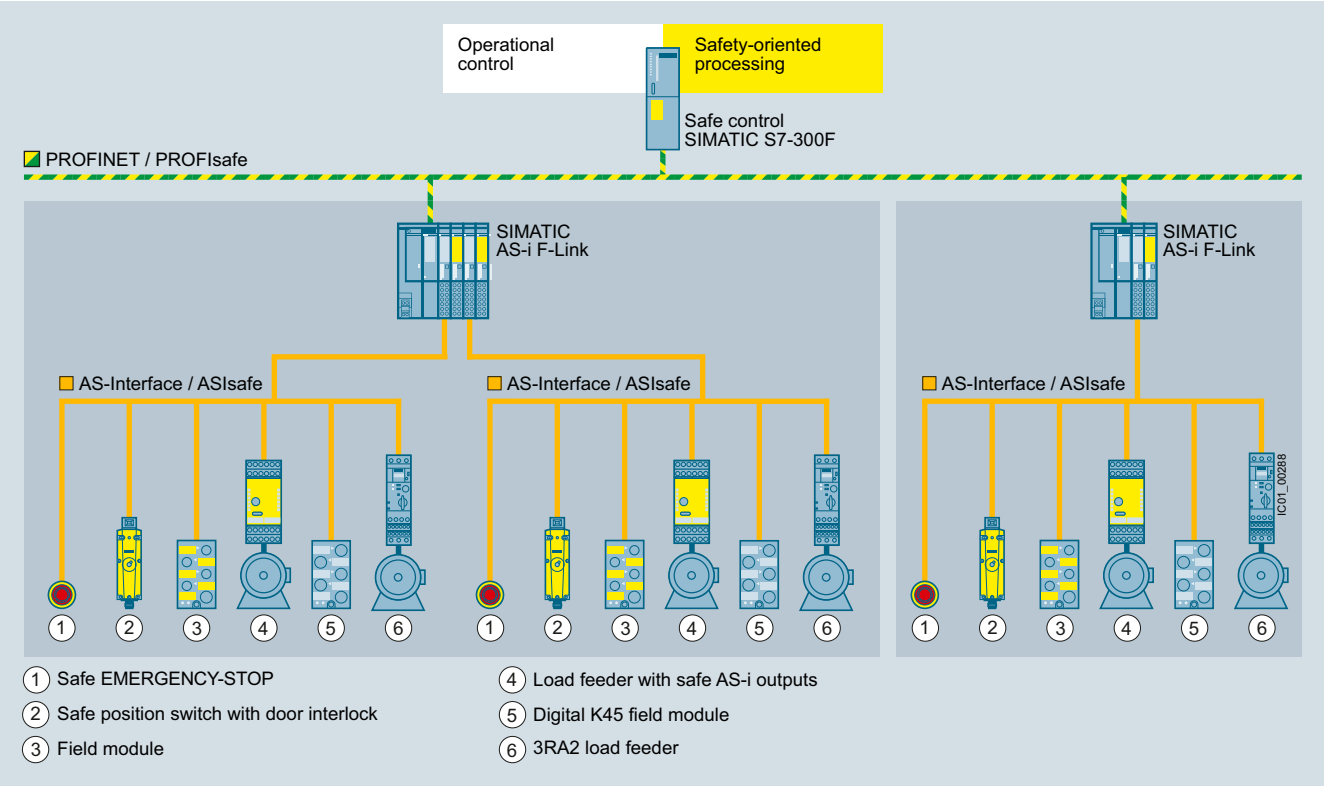
Thanks to use of the fail-safe module in the ET 200SP, it is possible to fulfill the safety-related application requirements in a manner that is integrated in the overall automation solution.

The safety functions required for fail-safe operation are integrated in the modules. Communication with the fail-safe SIMATIC S7 CPUs is realized via PROFIsafe.

The safety application is programmed in the SIMATIC S7 F-CPU with Distributed Safety. The fail-safe input signals of the ASIsafe slave modules are read via the AS-i bus line and are combined with any chosen further signals in the fail-safe program.

The fail-safe output signals can be output through fail-safe SIMATIC output modules or also directly via AS-i – with the aid of fail-safe AS-i output modules, e.g. 3RK1405-1SE15-0AA2 (see Catalog IC 10, chapter 2 "Industrial Communication"). No special functions are required for this in the program.

Configuration examples of AS-Interface networks with CM AS-i Master ST and F-CM AS-i Safety ST for SIMATIC ET 200SP



AS-Interface configuration with SIMATIC AS-i F-Link, consisting of an ET 200SP station with CM AS-i Master ST and F-CM AS-i Safety ST modules

Ordering data

	Article No.
F-CM AS-i Safety ST communication module • Failsafe module for SIMATIC ET 200SP, can be plugged onto type C1 BaseUnit (alternatively, type C0) • Operation requires an AS-i master, e.g. CM AS-i Master ST (see p. 4/32) • Certified up to SIL 3 (IEC 62061/IEC 61508), PL e (EN ISO 13849-1) • Released for use with the PROFINET interface modules IM 155-6 PN Standard and IM 155-6 PN High Feature, under CPU S7-300F or CPU S7-416F. Additional releases on request. • Coding element type F (included in scope of delivery) • Dimensions (W × H × D / mm): 20 x 73 x 58	**3RK7136-6SC00-0BC1**
Accessories	
BaseUnit BU20-P6+A2+4B • BaseUnit (dark), BU type C1 • Suitable for the failsafe F-CM AS-i Safety ST module • Continuation of an AS-i network, connection with the AS-i voltage of the left-hand module	**6ES7193-6BP20-0BC1**
Coding element type F (spare part) • For the ET 200SP modules F-CM AS-i Safety ST, F-DI, F-DQ, F-PM-E • Packaging unit: 5 units	**6ES7193-6EF00-1AA0**
Additional accessories	see p. 9/32

More information

Manuals

See
http://support.automation.siemens.com/WW/view/en/90265988
for the "F-CM AS-i Safety ST for SIMATIC ET 200SP" manual.

See
http://support.automation.siemens.com/WW/view/en/59753521
for the "SIMATIC ET 200SP BaseUnits" manual.

See
http://support.automation.siemens.com/WW/view/en/58649293
for the "SIMATIC ET 200SP Distributed I/O System" system manual.

Industry Mall

For further information, see
"Automation" → "Industrial communication" →
"AS-Interface" → "Master" → "Master for SIMATIC ET 200".

BaseUnits

Overview

With the BaseUnits, the ET 200SP offers a rugged and service-friendly design with permanent wiring:

- No tools needed for one-handed wiring using push-in terminals
- Outstanding access due to arrangement of measuring tap, spring NC contacts and cable entry in columns, while at the same time reducing the space required by 64%
- Fault-proof color coding of the spring NC contacts for better orientation in the terminal panel
- Replacement of I/O modules during operation without affecting the wiring
- Operation with module gaps (missing I/O module)
- Automatic coding of the I/O modules prevents destruction of the electronics if a module is accidentally inserted in the wrong slot during replacement
- High immunity to electromagnetic interference due to
  - self-assembling shielded backplane bus,
  - multi-layer conductor plate with shield levels for interference-free signal transmission from the terminal to the I/O module,
  - system-integrated, space-saving shield connection for quick installation.

Technical specifications

	6ES7193-6BP00-0BA0 BU15-P16+A0+2B	**6ES7193-6BP00-0BA1** BU15-P16+A0+2B/T	**6ES7193-6BP00-0BD0** BU20-P12+A0+0B	**6ES7193-6BP00-0DA0** BU15-P16+A0+2D	**6ES7193-6BP00-0DA1** BU15-P16+A0+2D/T
Supply voltage					
Rated value (AC)			400 V; 230 V AC (L1, N)		
Dimensions					
Width	15 mm	15 mm	20 mm	15 mm	15 mm
Height	117 mm	117 mm	117 mm	117 mm	117 mm
Weights					
Weight, approx.	40 g	40 g	47 g	40 g	40 g

	6ES7193-6BP40-0BA1 BU15-P16+A0+12B/T	**6ES7193-6BP40-0DA1** BU15-P16+A0+12D/T
Dimensions		
Width	15 mm	15 mm
Height	141 mm	141 mm
Weights		
Weight, approx.	50 g	50 g

	6ES7193-6BP20-0BA0 BU15-P16+A10+2B	**6ES7193-6BP20-0BB0** BU20-P12+A4+0B	**6ES7193-6BP20-0DA0** BU15-P16+A10+2D	**6ES7193-6BP20-0DC0** BU20-P6+A2+4D
Supply voltage				
Rated value (AC)		230 V; 110 V		230 V; 110 V
Dimensions				
Width	15 mm	20 mm	15 mm	20 mm
Height	141 mm	117 mm	141 mm	117 mm
Weights				
Weight, approx.	50 g	48 g	50 g	47 g

Ordering data	Article No.
Type A0 BaseUnits	
BU15-P16+A0+2D BU type A0; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	**6ES7193-6BP00-0DA0**
BU15-P16+A0+2B BU type A0; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	**6ES7193-6BP00-0BA0**
BU15-P16+A10+2D BU type A0; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for starting a new load group (max. 10 A)	**6ES7193-6BP20-0DA0**
BU15-P16+A10+2B BU type A0; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 10 internally jumpered AUX terminals (1 A to 10 A); for continuing the load group	**6ES7193-6BP20-0BA0**
Type B0 BaseUnits	
BU20-P12+A4+0B BU type B0; BaseUnit (dark) with 12 process terminals (1...12) to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the load group	**6ES7193-6BP20-0BB0**
Type B1 BaseUnits	
BU20-P12+A0+4B BU type B1; BaseUnit (dark) with 12 process terminals to the module; for continuing the load group	**6ES7193-6BP20-0BB1**
Type C0 BaseUnits	
BU20-P6+A2+4D BU type C0; BaseUnit (light) with 6 push-in terminals (1...6) to the module and an additional 2 AUX terminals; new load group	**6ES7193-6BP20-0DC0**
Type D0 BaseUnits	
BU20-P12+A0+0B BU type D0; BaseUnit (dark) with 12 push-in terminals, without AUX terminals, bridged to the left	**6ES7193-6BP00-0BD0**
Type A1 BaseUnits (with temperature detection)	
BU15-P16+A0+2D/T BU type A1; BaseUnit (light) with 16 process terminals to the module; for starting a new load group (max. 10 A)	**6ES7193-6BP00-0DA1**
BU15-P16+A0+2B/T BU type A1; BaseUnit (dark) with 16 process terminals to the module; for continuing the load group	**6ES7193-6BP00-0BA1**
BU15-P16+A0+12D/T BU type A1; BaseUnit (light) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for starting a new load group (max. 10 A)	**6ES7193-6BP40-0DA1**
BU15-P16+A0+12B/T BU type A1; BaseUnit (dark) with 16 process terminals (1...16) to the module and an additional 2x5 internally jumpered additional terminals (1 B to 5 B and 1 C to 5 C); for continuing the load group	**6ES7193-6BP40-0BA1**
Type F0 BaseUnits	
BU20-P8+A4+0B BU type F0; BaseUnit (dark) with 8 process terminals to the module and an additional 4 internally jumpered AUX terminals (1 A to 4 A); for continuing the load group	**6ES7193-6BP20-0BF0**
Accessories	
Reference identification label 10 sheets of 16 labels	**6ES7193-6LF30-0AW0**
BU cover For covering empty slots (gaps); 5 units	
• 15 mm wide	**6ES7133-6CV15-1AM0**
• 20 mm wide	**6ES7133-6CV20-1AM0**
Shield connection 5 shield supports and 5 shield terminals	**6ES7193-6SC00-1AM0**
Color-coded labels	
• Color code CC01, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP01-2MA0**
• Color code CC02, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP02-2MA0**
• Color code CC03, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP03-2MA0**
• Color code CC04, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP04-2MA0**
• Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units	**6ES7193-6CP71-2AA0**
• Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units	**6ES7193-6CP72-2AA0**
• Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units	**6ES7193-6CP73-2AA0**
• Color code CC74, for 2x5 additional terminals,5 x red, 5 x blue, for BU type A1, with push-in terminals; 10 units	**6ES7193-6CP74-2AA0**
• Color code CC81, for 4 AUX terminals 1 A to 4 A, yellow/green, for BaseUnit type B0; 10 units	**6ES7193-6CP81-2AB0**
• Color code CC82, for 4 AUX terminals 1 A to 4 A, red, for BaseUnit type B0; 10 units	**6ES7193-6CP82-2AB0**
• Color code CC83, for 4 AUX terminals 1 A to 4 A, blue, for BaseUnit type B0; 10 units	**6ES7193-6CP83-2AB0**
• Color code CC41, module-specific, for 12 push-in terminals; for BaseUnit type B1; 10 units	**6ES7193-6CP41-2MB0**
• Color code CC84, for 2 AUX terminals 1 A to 2 A, yellow/green, for BaseUnit type C0; 10 units	**6ES7193-6CP84-2AC0**
• Color code CC85, for 2 AUX terminals 1 A to 2 A, red, for BaseUnit type C0; 10 units	**6ES7193-6CP85-2AC0**
• Color code CC86, for 2 AUX terminals 1 A to 2 A, blue, for BaseUnit type C0; 10 units	**6ES7193-6CP86-2AC0**

BusAdapters

Overview

BusAdapter BA 2xRJ45

BusAdapter BA 2xFC

Some interface modules of the SIMATIC ET 200SP have a universal PROFINET interface for BusAdapters. With the appropriate BusAdapter, the type of connection can be adapted to the requirements of the respective application:

- For standard applications with a moderate mechanical and EMC load, the BusAdapter BA 2xRJ45 is used. It offers two sockets for standard RJ45 plugs.
- For machines and systems in which higher mechanical and/or EMC loads act on the devices, the BusAdapter BA 2xFC is recommended. In this case, the bus cables are connected directly by means of FastConnect terminals – similar to the PROFIBUS connector, proven in millions of applications. The technology is extremely quick to assemble and achieves 5 times better vibration resistance and also 5 times greater resistance to electromagnetic interference, when compared to RJ45 plug-in connectors.
- BusAdapters with connections for fiber-optic cables can be used to cover high potential differences between two stations and/or high EMC loads.

Another advantage of the BusAdapters: In order to repair defective RJ45 sockets or for subsequent conversion to the rugged FastConnect technology or a fiber-optic connection, only the adapter needs to be replaced.

The following interface modules offer a PROFINET connection via BusAdapter:

- IM 155-6PN Standard
- IM 155-6PN High Feature

Ordering data

	Article No.
BusAdapter BA 2xRJ45	**6ES7193-6AR00-0AA0**
BusAdapter BA 2xFC for increased vibration and EMC loads	**6ES7193-6AF00-0AA0**
BusAdapter BA 2xSCRJ, fiber-optic connection for POF or PCF cables up to 250 m, with monitoring of damping Can only be used with High Feature interface modules	**6ES7193-6AP00-0AA0**

	Article No.
Reference identification label 10 sheets of 16 labels	**6ES7193-6LF30-0AW0**
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 180 180° cable outlet	
1 unit	**6GK1901-1BB10-2AA0**
10 units	**6GK1901-1BB10-2AB0**
50 units	**6GK1901-1BB10-2AE0**

Overview

Labeling strips

- Labeling strips for ET 200SP
- Can be used for the interface module, bus adapter, I/O module and BU cover

BU covers

- Protective cover for empty slots of an ET 200SP
- For protecting the plug-in connectors of a BaseUnit without I/O module

Color-coded labels

- For module-specific identification of the potentials at the terminals of the BaseUnit
- For the prevention of wiring faults

Ordering data

	Article No.
Labeling strips	
500 labeling strips on roll, light gray, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AA0**
500 labeling strips on roll, yellow, for inscription with thermal transfer roll printer	**6ES7193-6LR10-0AG0**
1000 labeling strips DIN A4, light gray, card, for inscription with laser printer	**6ES7193-6LA10-0AA0**
1000 labeling strips DIN A4, yellow, card, for inscription with laser printer	**6ES7193-6LA10-0AG0**
BU cover	
For covering empty slots (gaps); 5 units	
• 15 mm wide	**6ES7133-6CV15-1AM0**
• 20 mm wide	**6ES7133-6CV20-1AM0**
Color-coded labels	
• Color code CC01, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP01-2MA0**
• Color code CC02, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP02-2MA0**
• Color code CC03, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP03-2MA0**
• Color code CC04, module-specific, for 16 push-in terminals; for BaseUnit type A0, A1; 10 units	**6ES7193-6CP04-2MA0**
• Color code CC71, for 10 AUX terminals 1 A to 10 A, for BU type A0, yellow/green, with push-in terminals; 10 units	**6ES7193-6CP71-2AA0**
• Color code CC72, for 10 AUX terminals 1 A to 10 A, for BU type A0, red, with push-in terminals; 10 units	**6ES7193-6CP72-2AA0**
• Color code CC73, for 10 AUX terminals 1 A to 10 A, for BU type A0, blue, with push-in terminals; 10 units	**6ES7193-6CP73-2AA0**
• Color code CC74, for 2x5 additional terminals, 5 x red, 5 x blue, for BU type A1, with push-in terminals; 10 units	**6ES7193-6CP74-2AA0**
• Color code CC81, for 4 AUX terminals 1 A to 4 A, yellow/green, for BaseUnit type B0; 10 units	**6ES7193-6CP81-2AB0**
• Color code CC82, for 4 AUX terminals 1 A to 4 A, red, for BaseUnit type B0; 10 units	**6ES7193-6CP82-2AB0**
• Color code CC83, for 4 AUX terminals 1 A to 4 A, blue, for BaseUnit type B0; 10 units	**6ES7193-6CP83-2AB0**
• Color code CC41, module-specific, for 12 push-in terminals; for BaseUnit type B1; 10 units	**6ES7193-6CP41-2MB0**
• Color code CC84, for 2 AUX terminals 1 A to 2 A, yellow/green, for BaseUnit type C0; 10 units	**6ES7193-6CP84-2AC0**
• Color code CC85, for 2 AUX terminals 1 A to 2 A, red, for BaseUnit type C0; 10 units	**6ES7193-6CP85-2AC0**
• Color code CC86, for 2 AUX terminals 1 A to 2 A, blue, for BaseUnit type C0; 10 units	**6ES7193-6CP86-2AC0**

Add-on products from third-party manufacturers

Overview

The following catalog pages contain non-binding information on supplementary products that are manufactured and marketed, not by Siemens, but by third-parties outside the Siemens group ("external companies"). These external companies organize the manufacture, sale and delivery of their products independently. Their own terms and conditions of business and delivery apply.

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Overview

Note

The 1-STEP-DRIVE-5A-48V module is a Phytron product and can only be obtained from them.

Overview

The 1-STEP-DRIVE-5A-48V module from Phytron is a high-precision stepper motor control with integrated power output stage for use in the SIMATIC ET 200S distributed I/O system.

The module can be used together with system and I/O components of the ET 200S distributed I/O system. Operation is possible with the following head assemblies:

- IM PROFIBUS
- IM PROFINET
- ET 200S CPU

Corresponding GSD files and an HSP are available for this.

Application

High-precision control of stepper motors:

The technology of the 1-STEP-DRIVE-5A-48V enables highly precise current settings which facilitate fine positioning up to 1/512 step with an absolute error of only ~0.0015°. This corresponds to approx. 102,400 positions per revolution or 0.0035°/step with a 200-step motor.

The module permits connection of a 2-phase stepping motor in the 200 W power range up to 5 A peak with a power supply of 24 to 48 V DC.

Sample function blocks are available for operation with SIMATIC and can be downloaded by the user from the Internet site specified below and then modified.

The 1-STEP-DRIVE-5A-48V provides the following positioning functions:

- Absolute positioning
- Relative positioning
- Reference point approach
- Endless axes: Speed mode/frequency output
- Selection of feedback value

In the manufacturer's manual, you can find a list of possible terminal modules with which the 1-STEP-DRIVE-5A-48V can be operated.

Technical specifications

- Suitable for bipolar control of 2-phase stepping motors of 4-, (6-) or 8-wire design (in 4-wire system)
- 5 A peak phase current with adjustable current steps
- Power supply 24 V to 48 V DC
- Up to 1/512 microstep (physical resolution: approx. 102,400 positions per revolution (0.0035° / step)). A counter module with encoder should be evaluated for microstep positioning
- Maximum step frequency: 510,000 steps/s
- 2 digital inputs for limit and reference switches
- Diagnostics LEDs (overcurrent, overtemperature, traversing task or motor running, ...)
- Short-circuit-proof, overload-proof
- Online power output stage parameterization and diagnostics
- Boost: boosted torque during acceleration or braking
- Selectable current controller frequency: 18, 20, 22 or 25 kHz

More information

You can find further information on the module and associated contact information on the Internet at:
http://www.phytron.de/1-step-drive

There you will also find the manual, the data sheet, the HSP, a link to the GSD files as well as sample function blocks for SIMATIC.

You can find Service and Support at:
http://www.phytron.de/support

Exemption from liability/Use of hyperlinks

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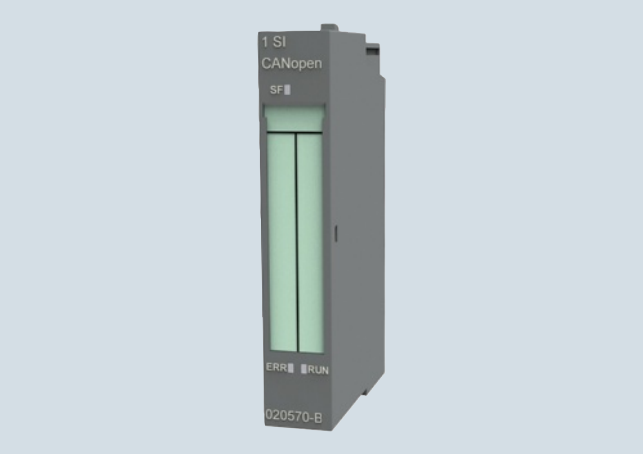
Add-on products from third-party manufacturers SIMATIC ET 200S 1 SI CANopen

Overview



Note

The 1 SI CANopen module is an HMS product and can only be obtained from them.

Overview

A CANopen module (1 SI CANopen) from HMS is available for use in ET 200S. It can be used together with system and I/O components of the ET 200S distributed I/O system. Operation is possible with the following head assemblies:

- IM PROFIBUS
- IM PROFINET
- ET 200S CPU

Corresponding GSD files and an HSP are available for this.

In the manual, you can find a list of possible terminal modules with which the 1 SI CANopen module can be operated.

Please note that the module cannot be operated together with the ET 200S COMPACT or the BASIC header of the ET 200S. Please refer to the manual for the currently approved Article No.'s. of the ET 200S head assemblies.

Application

CANopen is a widely used industrial bus system for a variety of different applications. The module allows simple and cost-effective connection of CANopen applications to SIMATIC.

- Control of hydraulic valves/axes in vehicles
- Control of motors in packaging machines or conveyors
- Capturing angular encoder positions in wind turbines
- Capturing of control devices on machines, e.g. joysticks
- Capturing the measured data of path encoders, inclinometers or angular encoders, e.g. for tower cranes or gantry cranes

The 1 SI CANopen module has the following properties:

- Operation either as CAN master or CAN slave
- The module complies with the CiA301rev CANopen specification. 4.2 or CiA302 (master).
- It supports the transparent CAN 2.0A standard (11-bit identifier). In this mode, CAN message frames can be sent and received by the CPU program, thus enabling implementation of customized CAN protocols.
- When used as master, up to 126 slaves, e.g. valves or actuators, can be operated on the module.

More information

The CANopen bus can be configured via any commercially available CANopen configuration tool. The HMS company provides corresponding "Anybus Configuration Manager CANopen" software together with the product. The configuration is saved directly in the module by means of a point-to-point connection via a USB to CAN adapter. Routing via PROFIBUS/PROFINET is not possible.

Function blocks are available for operation with SIMATIC and can be downloaded by the user from the Internet site specified below.

The module is also available in a SIPLUS version for use in extreme conditions as encountered e.g. on vehicles used outdoors. This version is also only available from HMS.

For further information, please contact HMS directly:

http://www.hms-networks.com/can-for-et200s

There you will also find the manual, the HSP, a link to the GSD files as well as the function blocks for SIMATIC.

Ordering and Support

Please note that ordering and support for the module are exclusively carried out via HMS. Please contact HMS directly should you have any questions concerning this module. The relevant contact details can be found on the Internet at

http://www.hms-networks.com/can-for-et200s

Exemption from liability/Use of hyperlinks

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Overview

- Interface modules for linking the ET 200MP to PROFINET
- These handle data exchange with the PROFINET I/O controller in the PLC
- Integrated 2-port switch for line topology
- Max. 30 I/O modules
- Shortest bus cycle 250 µs
- Linking to the isochronous task of the CPU
- Prioritized fast startup (FSU) with 500 ms (max. 12 I/O modules)
- Media Redundancy Protocol (MRP)
- Shared device on up to two I/O controllers (when configuring using GSD file; depends on the respective configuration tool)
- Omission of SIMATIC memory card (SMC); IM replacement without PG using LLDP

Starting from FW version V2.0.0, the IM155-5 PN ST interface module supports the following new functions:

- Submodule-granular shared device with up to two I/O controllers
- Configuration control (option handling)
- Module-internal shared input and output (MSI/MSO), i.e. the inputs or outputs of a module can be made available simultaneously to up to two I/O controllers

The IM155-5 PN HF interface module has the following additional functions:

- Shared device on up to 4 IO controllers
- Module-internal shared input and output (MSI/MSO) on up to four IO controllers
- Operation on a highly available SIMATIC S7-400H
- Support for the MRPD function (media redundancy with planned duplication)

Technical specifications

	6ES7155-5AA00-0AB0 IM 155-5 PN ST	**6ES7155-5AA00-0AC0** IM 155-5 PN HF
General information		
Product function		
• I&M data	Yes; I&M0 to I&M3	Yes; I&M0 to I&M3
Engineering with		
• STEP 7 TIA Portal can be configured/integrated as of version	V13 / V13	V13 / V13
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -	V5.5 SP3 / -
• PROFINET as of GSD version/GSD revision	V2.3 / -	V2.3 / -
Supply voltage		
Type of supply voltage	DC	DC
Rated value (DC)	24 V	24 V
Reverse polarity protection	Yes	Yes
Short-circuit protection	Yes	Yes
Mains buffering		
• Mains/voltage failure stored energy time	5 ms	5 ms
Hardware configuration		
Integrated power supply		Yes
Rack		
• maximum	30; I/O modules	30; I/O modules
Interfaces		
Number of PROFINET interfaces	1	1
1st interface		
• Interface types		
- Number of ports	2	2
- Integrated switch	Yes	Yes
- RJ 45 (Ethernet)	Yes	Yes
• Protocols		
- PROFINET IO Device	Yes	Yes
- Media redundancy	Yes	Yes
Interface types		
RJ 45 (Ethernet)		
• 10 Mbps		No
• 100 Mbps	Yes	Yes
• Transmission procedure	PROFINET with 100 Mbit/s full duplex (100BASE-TX)	PROFINET with 100 Mbit/s full duplex (100BASE-TX)
• Autonegotiation	Yes	Yes
• Autocrossing	Yes	Yes
Protocols		
Supports protocol for PROFINET IO	Yes	Yes
PROFINET IO Device		
• Services		
- Isochronous mode	Yes	Yes
- IRT, supported	Yes	Yes
- MRP, supported	Yes	Yes
- MRPD, supported		Yes
- PROFINET system redundancy		Yes
- Prioritized startup	Yes	Yes
- Shared device	Yes	Yes
- Number of IO controllers with shared device, max.	2	4
Open IE communication		
• TCP/IP	Yes	Yes
• SNMP	Yes	Yes
• LLDP	Yes	Yes
Isochronous mode		
Isochronous operation (application synchronized up to terminal)	Yes	Yes
equidistance	Yes	Yes

Technical specifications (continued)

	6ES7155-5AA00-0AB0 IM 155-5 PN ST	6ES7155-5AA00-0AC0 IM 155-5 PN HF
shortest clock pulse	250 µs	250 µs
max. cycle	4 ms	4 ms
Interrupts/diagnostics/ status information		
Status indicator	Yes	Yes
Alarms		
• Alarms	Yes	Yes
Diagnostic messages		
• Diagnostic functions	Yes	Yes

	6ES7155-5AA00-0AB0 IM 155-5 PN ST	6ES7155-5AA00-0AC0 IM 155-5 PN HF
Diagnostics indication LED		
• RUN LED	Yes; Green LED	Yes; Green LED
• ERROR LED	Yes; Red LED	Yes; Red LED
• MAINT LED	Yes; yellow LED	Yes; yellow LED
• Connection display LINK TX/RX	Yes; yellow LED	Yes; yellow LED
Isolation		
Isolation checked with	707 V DC (type test)	707 V DC (type test)
Dimensions		
Width	35 mm	35 mm
Height	147 mm	155 mm
Depth	129 mm	120 mm
Weights		
Weight, approx.	310 g	350 g

Ordering data

	Article No.
IM 155-5 PN interface module	
IP 20 degree of protection, module width 35 mm, installation on S7-1500 mounting rail	
IM 155-5 PN ST, standard version	**6ES7155-5AA00-0AB0**
IM 155-5 PN HF, High Feature version with additional functions	**6ES7155-5AA00-0AC0**
Accessories	
Front flap for IM 155-5 PN (spare part), 5 units	**6ES7528-0AA70-7AA0**
SIMATIC S7-1500 mounting rail	
Fixed lengths, with grounding elements	
• 160 mm	**6ES7590-1AB60-0AA0**
• 482 mm	**6ES7590-1AE80-0AA0**
• 530 mm	**6ES7590-1AF30-0AA0**
• 830 mm	**6ES7590-1AJ30-0AA0**
For cutting to length by customer, without drill holes; grounding elements must be ordered separately	
• 2000 mm	**6ES7590-1BC00-0AA0**
PE connection element for mounting rail 2000 mm	**6ES7590-5AA00-0AA0**
20 units	
Power supply	
For supplying the backplane bus of the S7-1500	
24 V DC input voltage, power 25 W	**6ES7505-0KA00-0AB0**
24/48/60 V DC input voltage, power 60 W	**6ES7505-0RA00-0AB0**
120/230 V AC input voltage, power 60 W	**6ES7507-0RA00-0AB0**
Power connector	**6ES7590-8AA00-0AA0**
With coding element for power supply module; spare part, 10 units	
Load power supply	
24 V DC/3 A	**6EP1332-4BA00**
24 V DC/8 A	**6EP1333-4BA00**
Power supply connector	
Spare part; for connecting the 24 V DC supply voltage	
• with push-in terminals	**6ES7193-4JB00-0AA0**

	Article 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 180	
180° cable outlet	
1 unit	**6GK1901-1BB10-2AA0**
10 units	**6GK1901-1BB10-2AB0**
50 units	**6GK1901-1BB10-2AE0**
IE FC TP Standard Cable GP 2x2	**6XV1840-2AH10**
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 20 m	
IE FC TP Trailing Cable 2 x 2 (Type C)	**6XV1840-3AH10**
4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 for trailing cable use; PROFINET-compatible; with UL approval;	
Sold by the meter, max. length 1000 m; minimum order 20 m	
IE FC TP Marine Cable 2 x 2 (Type B)	**6XV1840-4AH10**
4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug 180/90 marine certified,	
Sold by the meter, max. length 1000 m; minimum order 20 m	
IE FC Stripping Tool	**6GK1901-1GA00**
Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	

Overview

- Interface module for linking the ET 200MP to PROFIBUS
- Handles data exchange with the PROFIBUS master in the PLC
- Max. 12 I/O modules
- Automatic detection of baud rate 9.6 kBd ... 12 MBd
- PROFIBUS addresses 1 ... 125; adjustable using DIP switches
- Identification and maintenance data IM0 ... IM3

Technical specifications

	6ES7155-5BA00-0AB0
General information	
Product function	
• I&M data	Yes; I&M0 to I&M3
Engineering with	
• STEP 7 TIA Portal can be configured/integrated as of version	V13 / V13
• STEP 7 can be configured/integrated as of version	V5.5 SP3 / -
• PROFIBUS as of GSD version/GSD revision	V1.0 / V5.1
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	24 V
Reverse polarity protection	Yes
Mains buffering	
• Mains/voltage failure stored energy time	5 ms
Hardware configuration	
Rack	
• maximum	12; I/O modules
Interfaces	
Number of PROFIBUS interfaces	1
1st interface	
• Protocols	
- PROFIBUS DP slave	Yes
Interface types	
RS 485	
• Transmission rate, max.	12 Mbit/s
Protocols	
PROFIBUS	
• Services	
- SYNC capability	Yes
- FREEZE capability	Yes
- DPV1	Yes
Interrupts/diagnostics/ status information	
Status indicator	Yes
Alarms	
• Alarms	Yes
Diagnostic messages	
• Diagnostic functions	Yes
Diagnostics indication LED	
• RUN LED	Yes; Green LED
• ERROR LED	Yes; Red LED
• MAINT LED	Yes; yellow LED
Isolation	
Isolation checked with	707 V DC (type test)
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	360 g

Ordering data

	Article No.
IM 155-5 DP ST interface module	**6ES7155-5BA00-0AB0**
IP 20 degree of protection, module width 35 mm, installation on S7-1500 mounting rail	
Accessories	
Front flap for IM 155-5 PN (spare part), 5 units	**6ES7528-0AA70-7AA0**
SIMATIC S7-1500 mounting rail	
Fixed lengths, with grounding elements	
• 160 mm	**6ES7590-1AB60-0AA0**
• 482 mm	**6ES7590-1AE80-0AA0**
• 530 mm	**6ES7590-1AF30-0AA0**
• 830 mm	**6ES7590-1AJ30-0AA0**
For cutting to length by customer, without drill holes; grounding elements must be ordered separately	
• 2000 mm	**6ES7590-1BC00-0AA0**
PE connection element for mounting rail 2000 mm	**6ES7590-5AA00-0AA0**
20 units	
Load power supply	
24 V DC/3 A	**6EP1332-4BA00**
24 V DC/8 A	**6EP1333-4BA00**

9

Ordering data

	Article No.
Power supply connector	
Spare part; for connecting the 24 V DC supply voltage	
• with push-in terminals	**6ES7193-4JB00-0AA0**
PROFIBUS connector	
• Connector for PROFIBUS, up to 12 Mbit/s, 90° cable outlet, insulation displacement system, without PG socket	**6ES7972-0BA70-0XA0**
• Connector for PROFIBUS, up to 12 Mbit/s, 90° cable outlet, insulation displacement system, with PG socket	**6ES7972-0BB70-0XA0**
PROFIBUS Stripping Tool	**6GK1905-6AA00**
Stripping tool for fast stripping of the PROFIBUS	
PROFIBUS FastConnect 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	**6XV1830-0EH10**
• 20 m	**6XV1830-0EN20**
• 50 m	**6XV1830-0EN50**
• 100 m	**6XV1830-0ET10**
• 200 m	**6XV1830-0ET20**
• 500 m	**6XV1830-0ET50**
• 1000 m	**6XV1830-0EU10**
FC robust cable	**6XV1830-0JH10**
Bus cable with PUR sheath for use under conditions of extreme mechanical stress or aggressive chemicals, 2-core, shielded, sold by the meter, maximum delivery unit 1000 m, minimum order quantity 20 m	
FC flexible cable	**6XV1831-2K**
PROFIBUS bus cable, flexible, with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m	

	Article No.
FC trailing cable	**6XV1830-3EH10**
PROFIBUS trailing cable, at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m	
FC bus cable	**6XV1830-0GH10**
PROFIBUS Food bus cable with PE sheath for use in the food and beverages industry, 2-core, shielded, sold by the meter, maximum delivery unit 1000 m, minimum order quantity 20 m	
FC underground cable	**6XV1830-3FH10**
PROFIBUS underground cable, 2-core, shielded, sold by the meter, maximum delivery unit 1000 m, minimum order quantity 20 m	
FC FRNC cable	**6XV1830-0LH10**
PROFIBUS bus cable, flame-retardant and halogen-free, with copolymer sheath FRNC, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m	
FC trailing cable	**6XV1831-2L**
PROFIBUS trailing cable, at least 3 million bending cycles, min. bending radius approx. 120 mm, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m	
IE FC Stripping Tool	**6GK1901-1GA00**
Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables	

Overview

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

For technical documentation on SIPLUS, see:

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

Technical specifications

The technical data correspond to those of the based-on modules apart from the values listed in the table:

	6AG1153-1AA03-2XB0	6AG1153-2BA02-2XY0	6AG1153-2BA02-7XB0
Based on	**6ES7153-1AA03-0XB0**	**6ES7153-2BA02-0XB0**	**6ES7153-2BA02-0XB0**
Ambient conditions			
Operating temperature			
• Min.	-40 °C; = Tmin	-25 °C; = Tmin	-40 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL use
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)		
• at cold restart, minimum	-25 °C		-25 °C
• Relative humidity			
- With condensation, tested in accordance with IEC 60068-2-38, maximum	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)		
• Resistance			
- to biologically active substances/conformity with EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- to chemically active substances/conformity with EN 60721-3-3	Yes; Class 3C4 incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances/conformity with EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Technical specifications (continued)

	6AG1195-7HA00-2XA0	6AG1195-7HB00-7XA0	6AG1195-7HC00-2XA0
Based on	**6ES7195-7HA00-0XA0**	**6ES7195-7HB00-0XA0**	**6ES7195-7HC00-0XA0**
Ambient conditions			
Operating temperature			
• Min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Extended ambient conditions			
• Relative to ambient temperature-atmospheric pressure-installation altitude	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)		
• Relative humidity			
- With condensation/maximum/tested in accordance with IEC 60068-2-38	100 %	100 %	100 %
• Resistance			
- to biologically active substances	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna). The supplied connector covers must remain on the unused interfaces during operation!
- to chemically active substances	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3C4 (RH < 75%) incl. salt spray according to EN 60068-2-52 (degree of severity 3). The supplied connector covers must remain on the unused interfaces during operation!
- to mechanically active substances	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!	Yes; Class 3S4 incl. sand, dust. The supplied connector covers must remain on the unused interfaces during operation!

Ordering data

	Article No.
SIPLUS ET 200M IM 153-1	
Slave interface for connecting an ET 200M to PROFIBUS DP for a maximum of 8 S7-300 modules	
• Extended temperature range and exposure to media	**6AG1153-1AA03-2XB0**
• conformity to EN 50155	**6AG1153-1AA03-2XB0**
SIPLUS ET 200M IM 153-2 High Feature	
Slave interface for connecting an ET 200M to PROFIBUS DP for a maximum of 12 S7-300 modules; also for use in redundant systems	
• Extended temperature range and exposure to media	**6AG1153-2BA02-7XB0**
• conforms to EN 50155	**6AG1153-2BA02-2XY0**
Bus module for SIPLUS ET 200M	
Bus module for accommodating a power supply and an IM 153 module for the hot-swapping function during RUN, incl. bus module cover	
• Extended temperature range and exposure to media	**6AG1195-7HA00-2XA0**
Bus module for accommodating two 40-mm wide I/O modules for the hot-swapping function	
• Extended temperature range and exposure to media	**6AG1195-7HB00-7XA0**
Bus module for accommodating one 80 mm wide I/O module for the hot swapping function	
• Extended temperature range and exposure to media	**6AG1195-7HC00-2XA0**
Bus module for accommodating two IM-153 modules for the hot-swapping function; for setting up redundant systems	
• Extended temperature range and exposure to media	**6AG1195-7HD10-2XA0**
RS 485 bus connector with 90° cable outlet	
max. transfer rate 12 Mbit/s	
Extended temperature range and exposure to media	
• without PG interface	**6AG1972-0BA12-2XA0**
• with PG interface	**6AG1972-0BB12-2XA0**
Further accessories	see SIMATIC ET 200M IM 153-1/153-2, catalog ST 70 · 2013, page 9/194

Overview

- Expansion modules with analog inputs and outputs for connecting sensors/actuators
- With diagnostics functionality, limit values and substitute values

Technical specifications

	6ES7144-4FF01-0AB0	6ES7144-4GF01-0AB0
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
• Reverse polarity protection	Yes; against destruction	Yes; against destruction
Input current		
from load voltage L+ (without load), max.		
from backplane bus 3.3 V DC, max.	12 mA	12 mA
Encoder supply		
Short-circuit protection	Yes; per module, electronic to frame	Yes; per module, electronic to frame
Power losses		
Power loss, typ.	1.1 W	1.1 W
Address area		
Address space per module		
• Address space per module, max.	8 byte	8 byte
Analog inputs		
Number of analog inputs	4	4
permissible input voltage for voltage input (destruction limit), max.	35 V	
permissible input current for current input (destruction limit), max.		40 mA
Constant measurement current for resistance-type transmitter, typ.		
Cycle time (all channels) max.	5 ms	10 ms
Technical unit for temperature measurement adjustable		
Input ranges		
• Voltage	Yes	No
• Current	No	Yes
• Thermocouple	No	No
• Resistance thermometer	No	No
• Resistance	No	No

	6ES7144-4FF01-0AB0	6ES7144-4GF01-0AB0
Input ranges (rated values), voltages		
• 0 to +10 V	Yes	
• 1 to 5 V	Yes	
• -10 V to +10 V	Yes	
• -5 V to +5 V	Yes	
• -80 mV to +80 mV		
• Input resistance (-80 mV to +80 mV)		
Input ranges (rated values), currents		
• 0 to 20 mA		Yes
• Input resistance (0 to 20 mA)		50 Ω
• -20 to +20 mA		Yes
• Input resistance (-20 to +20 mA)		50 Ω
• 4 to 20 mA		Yes
• Input resistance (4 to 20 mA)		50 Ω
Cable length		
• Cable length, shielded, max.	30 m	30 m
Analog value creation		
Measurement principle	integrating	integrating
Integrations and conversion time/resolution per channel		
• Resolution with overrange (bit including sign), max.	15 bit; 15 bits + sign at ±10 V, at ±5 V; 15 bits at 0 V to 10 V, at 1 V to 5 V	15 bit; 15 bits + sign at ±10 V, at ±5 V; 15 bits at 0 V to 10 V, at 1 V to 5 V
• Integration time, ms	0,3 / 16,7 / 20 / 60	0,3 / 16,7 / 20 / 60
• Interference voltage suppression for interference frequency f1 in Hz	16,67 / 50 / 60 / 3600	16,67 / 50 / 60 / 3600
• Conversion time (per channel)	1.1 ms	1.1 ms
Smoothing of measured values		
• Parameterizable	Yes	Yes
• Step: None	Yes; 1 x cycle time	Yes; 1 x cycle time
• Step: low	Yes; 4 x cycle time	Yes; 4 x cycle time
• Step: Medium	Yes; 16 x cycle time	Yes; 16 x cycle time
• Step: High	Yes; 64 x cycle time	Yes; 64 x cycle time
Encoder		
• for current measurement as 2-wire transducer		Yes
• for current measurement as 4-wire transducer		Yes
Errors/accuracies		
Linearity error (relative to input range), (+/-)	0.0075 %	0.0075 %
Crosstalk between the inputs, min.	-70 dB	-70 dB
Repeat accuracy in steady state at 25 °C (relative to input area), (+/-)	0.004 %	0.004 %
Operational limit in overall temperature range		
• Voltage, relative to input area, (+/-)	0.1 %	
• Current, relative to input area, (+/-)		0.1 %
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input area, (+/-)	0.075 %	
• Current, relative to input area, (+/-)		0.075 %

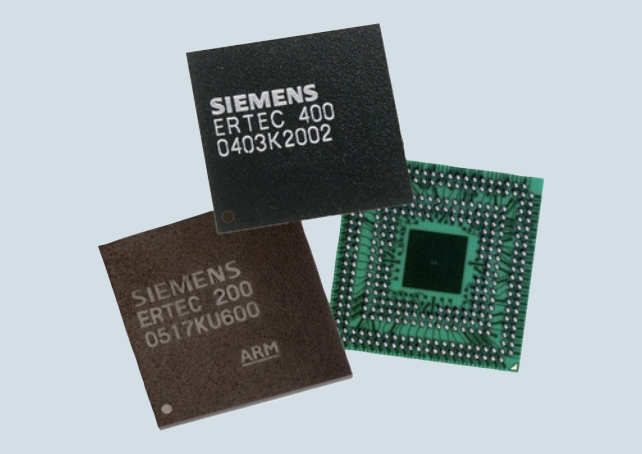
Technical specifications (continued)

	6ES7144-4FF01-0AB0	6ES7144-4GF01-0AB0
Interference voltage suppression for f = n x (f1 +/- 0.5 %), f1 = interference frequency		
• Series mode interference (peak value of interference < rated value of input range), min.	60 dB	60 dB
• common mode voltage (USS < 2.5 V) , min.	80 dB; Interference voltage < 10 V	80 dB; Interference voltage < 5 V
Interrupts/diagnostics/ status information		
Alarms		
• Diagnostic alarm	Yes; Parameterizable	Yes; Parameterizable
• Limit value alarm	Yes	Yes
• Hardware interrupt	Yes; (limit value alarm), can be parameterized for channel 0	Yes; (limit value alarm), can be parameterized for channel 0
Diagnostic messages		
• Diagnostics	Yes	Yes
• Wire break	Yes; at 1 to 5 V	Yes; at 4 to 20 mA
• Short circuit	Yes; at 1 to 5 V	Yes; at 4 to 20 mA
• Group error	Yes	Yes
• Overflow/underflow		
Diagnostics indication LED		
• Group error SF (red)	Yes	Yes
Galvanic isolation		
Galvanic isolation analog inputs		
• between the channels	No	No
• between the channels and the backplane bus	Yes	Yes
• between the channels and the load voltage L+		
Permissible potential difference between the inputs (UCM)		
between inputs and MANA (UCM)	10 Vpp AC	5 Vpp AC
between MANA and M internally (UISO)		
Isolation		
Isolation checked with	500 V DC	500 V DC
Dimensions		
Width	45 mm	45 mm
Height	130 mm	130 mm
Depth	35 mm	35 mm
Weights		
Weight, approx.	150 g	150 g

Ordering data

	Article No.
4AI U analog input module High Feature, ±10 V; ±5 V; 0 to 10 V; 1 to 5 V, channel-specific diagnostics, including bus module. Connection module must be ordered separately	**6ES7144-4FF01-0AB0**
4AI I analog input module High Feature, ±20 mA; 0 to 20 mA; 4 to 20 mA, channel-specific diagnostics, including bus module. Connection module must be ordered separately	**6ES7144-4GF01-0AB0**
Accessories	
CM IO 4 x M12 connection module 4 M12 sockets for connecting digital or analog sensors or actuators to ET 200pro	**6ES7194-4CA00-0AA0**
M12 compensation connectors with integral PT100 for reference point compensation when connecting thermocouples	**6ES7194-4AB00-0AA0**
Module identification labels for color coding of the CM IOs in the colors of white, red, blue and green; pack with 100 units each	**6ES7194-4HA00-0AA0**
M12 sealing cap for protection of unused M12 connections with ET 200pro	**3RX9802-0AA00**

Overview



With the Industrial Ethernet ASICs of the ERTEC family (Enhanced Real-Time Ethernet Controller), devices and systems can be connected to PROFINET without great effort. The high-performance Ethernet controllers with 32-bit microprocessor as well as integral real-time switch for Real Time Ethernet have been specially developed for industrial use.

These Ethernet controllers handle all the data transmission for PROFINET with Real-Time (RT) and Isochronous Real-Time (IRT) and thus offload the application processor. Thanks to the integral 2-port switch (ERTEC 200 and ERTEC 200P) or 4-port switch (ERTEC 400), there are no costs for external switches. Flexible topologies such as star, tree and linear topologies can be implemented without any other external network components.

- ERTEC 200P
  with integral 2-port switch and maximum performance for compact and modular PROFINET field devices.
  The ERTEC 200P is designed for cycle times up to 31.25 µs. In conjunction with a high-speed ARM 926 CPU, it meets all the requirements for powerful PROFINET implementation.
- ERTEC 200
  with an integral 2-port switch for developing compact or modular PROFINET field devices.
- ERTEC 400
  with 4 integral ports and one integral PCI interface for developing network components and field devices with specific requirements regarding communication capabilities.

The EK-ERTEC 200P PN IO, DK-ERTEC 200 PN IO and DK-ERTEC 400 PN IO development kits enable the uncomplicated development of PROFINET field devices thanks to fast and simple integration of the PROFINET IO functionalities based on the ERTEC.

Technical specifications

	ERTEC 400	ERTEC 200	ERTEC 200P
Transmission rate	10/100 Mbit/s	10/100 Mbit/s	100 Mbit/s
Interfaces			
• Ethernet / PHY interface	4 x PHY interface	2 x Ethernet interface (PHY integrated) or alternatively 2 x PHY interface (for connection of optical PHYs)	2 x Ethernet interface (PHY integrated) or alternatively 2 x PHY interface (for connection of optical PHYs)
	• Half/full duplex	• Half/full duplex	Half/full duplex
- In connection with the corresponding PHY types:	Support for copper and fiber-optic cables; autosensing; autocrossover	Support for copper and fiber-optic cables (PHY for copper integrated); autosensing; autocrossover	Support for copper and fiber-optic cables (PHY for copper integrated); autosensing; autocrossover
• Local Bus Unit (LBU)	Local bus master interface for connecting an external host with access to internal areas of the ERTEC; 16 bit data bit width	Local bus master interface for connecting an external host with access to internal areas of the ERTEC; 16 bit data bit width	XHIG (external host interface); 16/32 bit data bit width
• External memory interface (EMIF)			
- SDRAM controller	128 MB/16 bit or 256 MB/32 bit	64 MB/16 bit or 128 MB/32 bit	128 MB/16 bit or 256 MB/32 bit
- SRAM controller	4 x 16 MB for asynchronous blocks (SRAM, flash, I/O 8/16/32 bit)	4 x 16 MB for asynchronous blocks (SRAM, flash, I/O 8/16/32 bit)	4 x 16 MB for asynchronous blocks (SRAM, flash, I/O 8/16/32 bit)
- Chip-select support	yes	yes	yes
• IO interfaces	32 parameterizable I/O (GPIO); multifunctional outputs	45 parameterizable I/O (GPIO); multifunctional outputs	up to 96 parameterizable I/O (GPIO); multifunctional outputs
• Intelligent switching and PROFINET IRT prioritization/timing	yes	yes	yes
ARM processor			
• Integral ARM946 processor	32-bit ARM system	32-bit ARM system	32-bit ARM system
- Adjustable operating frequency	50/100/150 MHz	50/100/150 MHz	125/250 MHz
Supply voltage			
• Core (VDD Core)	1.5 V +/- 10 %	1.5 V +/- 10 %	1.2 V +5%/-0.1 V
• I/Os (VDD IO)	3.3 V +/- 10 %	3.3 V +/- 10 %	3.3 V +5%/-10%
• External host interface (XHIF)	-	-	1.8 V +5%/-10%
• PHY	-	-	1.5 V +5%/-10%
• External host interface (XHIF)	-	-	1.8 V/3.3 V +5%/-10%
Perm. ambient conditions			
• Operating temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
• Transport/storage temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
• Relative humidity	Max. 95 % at +25 °C	Max. 95 % at +25 °C	Max. 95 % at +25 °C

Technical specifications (continued)

	ERTEC 400	ERTEC 200	ERTEC 200P
Constructional design			
• Housing	Plastic FBGA 304 Pin	Plastic FBGA 304 Pin	Plastic FBGA 400 Pin
• Pinning Ball Pitch	0.8 mm	0.8 mm	0.8 mm
Dimensions (W x H x D) in mm - ERTEC	19 x 1 x 19	19 x 1 x 19	17 x 1 x 17
Supported communications protocols			
• General Ethernet protocols	In accordance with the respective software implementation that uses the ERTEC as Ethernet controller	In accordance with the respective software implementation that uses the ERTEC as Ethernet controller	In accordance with the respective software implementation that uses the ERTEC as Ethernet controller
• PROFINET in combination with a PROFINET Software Stack	Real-Time communication (RT); Isochronous Real-Time communication (IRT)	Real-Time communication (RT); Isochronous Real-Time communication (IRT)	Real-Time communication (RT); Isochronous Real-Time communication (IRT)

Ordering data

	Article No.
ERTEC 200P	
ASIC for connection to Switched Ethernet 100 Mbit/s, Ethernet controller with integral 2-port switch, ARM 926 processor and integral PHYs	
• 10 units (Evaluation Pack)	**6ES7195-0BH00-0XA0**
• 90 units (individual tray)	**6ES7195-0BH10-0XA0**
• 450 units (drypack, 5 trays)	**6ES7195-0BH20-0XA0**
Evaluation Kit EK-ERTEC 200P PN IO	**6ES7195-3BE00-0YA0**
ERTEC 200	
ASIC ERTEC 200 for connection to Switched Ethernet 10/100 Mbit/s, Ethernet controller with integral 2-port switch, ARM 946 processor and integral PHYs	
• 70 units (individual tray),	**6GK1182-0BB01-0AA1**
• 350 units (drypack, 5 trays),	**6GK1182-0BB01-0AA2**
• 3500 units (package, 10 drypacks)	**6GK1182-0BB01-0AA3**
Development Kit DK-ERTEC 200 PN IO	**6GK1953-0BA00**
ERTEC 200 PN IO Starter Kit	**6ES7195-3BD00-0YA0**
ERTEC 400	
ASIC ERTEC 400 for connection to switched Ethernet 10/100 Mbit/s, Ethernet controller with integrated 4-port switch, ARM 946 RISC and PCI interface (V2.2), data preparation for real-time and isochrone real-time for PROFINET IO	
• 70 units (individual tray),	**6GK1184-0BB01-0AA1**
• 350 units (drypack, 5 trays),	**6GK1184-0BB01-0AA2**
Development kit DK-ERTEC 400 PN IO	**6GK1953-0CA00**

Overview

With the development packages for PROFINET, compact or modular PROFINET field devices can be developed quickly and with little effort. Depending on the application, different development packages are available.

The development packages for the ASICs of the ERTEC family (Enhanced Real-Time Ethernet Controller) are suitable for the development of field devices with an integrated IRT switch (Isochronous Real-Time). The demand for real-time capability, linear topology capability, and for IT integration is therefore met perfectly.

With the help of the development package for standard Ethernet controllers, PROFINET devices can be developed on the basis of a standard Ethernet controller. Devices with RT (Real-Time) can be implemented in the field device without special hardware.

The PROFIsafe StarterKit permits the implementation of fail-safe devices. In so doing, the PROFIsafe Stack applicatively builds on the PROFINET stack.

Ordering data

	Article No.
ERTEC development kits	
Evaluation Kit EK-ERTEC 200P PN IO	**6ES7195-3BE00-0YA0**
Development kit DK-ERTEC 200 PN IO	**6GK1953-0BA00**
Development kit DK-ERTEC 400 PN IO	**6GK1953-0CA00**
ERTEC 200 PN IO Starter Kit	**6ES7195-3BD00-0YA0**
Development kit for standard Ethernet controller	**6ES7195-3BC00-0YA0**
PROFIsafe starter kit V3.4	**6ES7195-3BF02-0YA0**
ERTEC ASICs	
ERTEC 200P	
ASIC for connection to Switched Ethernet 100 Mbit/s, Ethernet controller with integral 2-port switch, ARM 926 processor and integral PHYs	
• 10 units (Evaluation Pack)	**6ES7195-0BH00-0XA0**
• 90 units (individual tray)	**6ES7195-0BH10-0XA0**
• 450 units (drypack, 5 trays)	**6ES7195-0BH20-0XA0**
ERTEC 200	
ASIC ERTEC 200 for connection to Switched Ethernet 10/100 Mbit/s, Ethernet controller with integral 2-port switch, ARM 946 processor and integral PHYs	
• 70 units (individual trays),	**6GK1182-0BB01-0AA1**
• 350 units (drypack, 5 trays),	**6GK1182-0BB01-0AA2**
• 3500 units (package, 10 drypacks)	**6GK1182-0BB01-0AA3**
ERTEC 400	
ASIC ERTEC 400 for connection to Switched Ethernet 10/100 Mbit/s, Ethernet controller with integral 4-port switch, ARM 946 processor and PCI interface (V2.2)	
• 70 units (individual trays),	**6GK1184-0BB01-0AA1**
• 350 units (drypack, 5 trays),	**6GK1184-0BB01-0AA2**
Accessories	
PROFINET IO product line license for one product line	**6ES7195-3BC10-0YA0**

PROFINET Driver

Overview

- For connecting distributed I/O and drives to user-specific control applications via PROFINET
- Operation of the control software on a standard PC using the standard Ethernet interface of the PC;
- Supplied as portable source code and can therefore be used with any operating system
- Sample application for Windows included in the scope of delivery; uses SIMATIC IPCs as example hardware

Ordering data

	Article No.
PROFINET Driver	
For connecting distributed I/O and drives to user-specific control applications via PROFINET	
Development license	**6ES7195-3AA00-0YA0**
Runtime licenses	
• 10 units	**6ES7195-3AA10-0XA0**
• 50 units	**6ES7195-3AA20-0XA0**
• 200 units	**6ES7195-3AA30-0XA0**
• 500 units	**6ES7195-3AA40-0XA0**

Software for SIMATIC controllers

11

Brochures

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

www.siemens.com/simatic/printmaterial

Information on software licensing
Software Update Service

Overview Licensing

Software types

Siemens Industry Automation & Drive Technologies offers different types of licenses for software.

For further information, see chapter 15, page 15/29.

Overview Software Update Service

- Service for automatic dispatch of all new software versions during contract lifetime
- Reduced logistics effort thanks to automatic contract extension
- Reduced costs as updates are provided free of charge

Ordering

- The Software Update Service is ordered in the same way as any other product. The corresponding order number is given in the ordering information of the software product in question.
- You must own the current version of the software.
- One Software Update Service is ordered for each software license installed.
- The Software Update Service runs for 1 year from date of order.
- It is extended automatically by a further year in each case, as long as it is not canceled 3 months before it expires.
- An annual lump sum is invoiced per license.

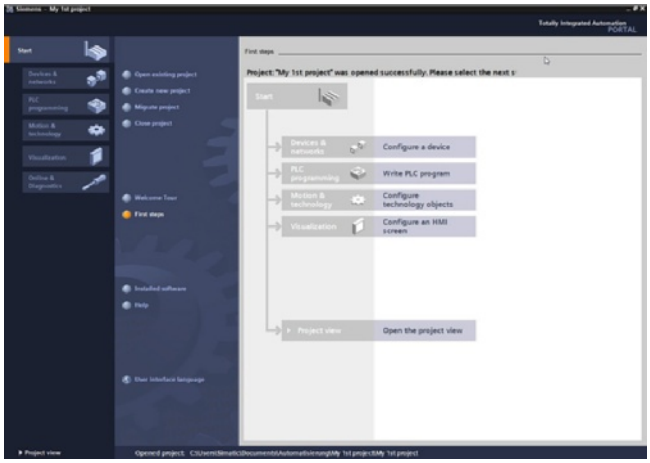
Application

SIMATIC software is continuously enhanced and improved. The **Software Update Service** is the easiest way to regularly take advantage of these improvements. This service automatically sends new software updates when they are released so you always have the latest version.

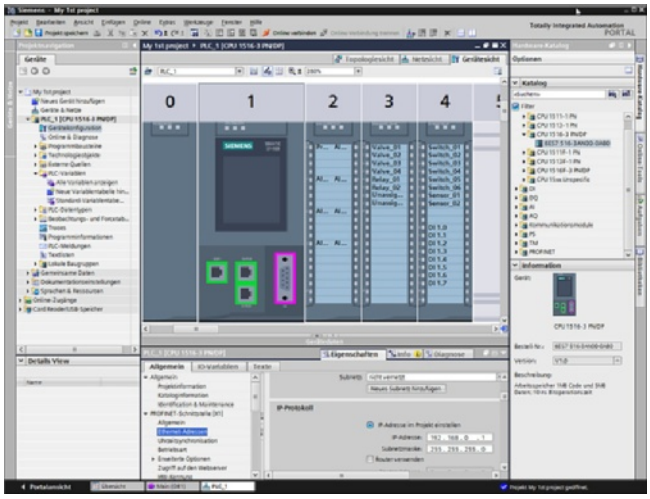
The Software Update Service

- Saves time and effort:
  Once it is ordered, the Software Update Service is automatically renewed every year.
- Lowers costs:
  The service pays for itself after the first update as it costs less than an individually ordered update.
- Makes budgeting easier:
  Software expenditures can be accounted for early in the budgeting process and they are easier to write off.

Overview



STEP 7 V13 (TIA Portal), portal view



STEP 7 V13 (TIA Portal), device view: configuring and parameterizing in photographically realistic representation

Intuitive, efficient and future-oriented - the engineering software for programming the SIMATIC controllers

SIMATIC STEP 7 Professional V13 is the engineering system for the SIMATIC controllers S7-1200, S7-300, S7-400, WinAC, and also optimally supports the new SIMATIC S7-1500 controllers.

SIMATIC STEP 7 Basic V13 is the engineering system for the S7-1200.

STEP 7 V13 is based on the central engineering framework Totally Integrated Automation Portal (TIA Portal), which offers the user a uniform, efficient and intuitive solution to all automation tasks.

Technical specifications

	STEP 7 Professional / Basic V13 (TIA Portal)
Type of license	Floating license
Software class	A
Current version	V13
Target system	SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC
Operating system	Windows 7 (64-bit) • Windows 7 Professional SP1 • Windows 7 Enterprise SP1 • Windows 7 Ultimate SP1 Windows 8.1 (64-bit) • Windows 8.1 • Windows 8.1 Professional • Windows 8.1 Enterprise Windows Server (64-bit) • Windows Server 2008 R2 StdE SP1 (full installation) • Windows Server 2012 R2 StdE (full installation)
Computer	SIMATIC Field PG M4 PREMIUM or higher (or comparable PC)
Processor	Intel Core i5-3320M 3.3GHz or higher
RAM	min. 8 GB
Hard disk	300 GB SSD
Screen	15.6" widescreen display (1920 x 1080)
Note	Includes the IEC programming languages SCL, LAD, FBD, STL and GRAPH

Compatibility with other SIMATIC products

STEP 7 Professional / Basic V13 (incl. WinCC Basic V13) can be installed on a PC in parallel with other versions of STEP 7 V12, V5.4 or V5.5, STEP 7 Micro/WIN, WinCC flexible (from 2008) and WinCC (V7.0 SP2 or higher).

STEP 7 (TIA Portal)

Ordering data	Article No.
STEP 7 Professional / Basic V13 Target system: SIMATIC S7-1200, S7-1500, S7-300, S7-400, WinAC Requirement: Windows 7 Professional SP1 (64 bit), Windows 7 Enterprise SP1 (64 bit), Windows 7 Ultimate SP1 (64 bit), Windows 8.1 (64 bit), Windows 8.1 Professional (64 bit), Windows 8.1 Enterprise (64 bit), Windows Server 2008 R2 StdE (full installation), Windows Server 2012 StdE (full installation) Form of delivery: German, English, Chinese, Italian, French, Spanish	
STEP 7 Professional V13, Floating License	**6ES7822-1AA03-0YA5**
STEP 7 Professional V13, Floating License, software download incl. license key [1] E-mail address required for delivery	**6ES7822-1AE03-0YA5**
STEP 7 Professional V13, Trial License	**6ES7822-1AA03-0YA7**
STEP 7 Professional V13 promotional package Only valid if ordered together with a Software Update Service 6ES7810-5CC04-0YE2 (STEP 7 Professional and STEP 7 Professional in TIA Portal).	
• PowerPack & upgrade from STEP 7 V5.5 to STEP 7 Professional 2010/V13, Floating License. Prerequisite is an existing STEP 7 Software Update Service.	**6ES7822-1AA03-0XC2**
• PowerPack & upgrade from STEP 7 V5.5 to STEP 7 Professional 2010/V13, Floating License. Prerequisite is an existing STEP 7 Software Update Service. Software download incl. license key [1] E-mail address required for delivery	**6ES7822-1AE03-0XC2**
• PowerPack & upgrade from STEP 7 V5.4/V5.5, ... to STEP 7 Professional 2010/V13, Floating License. Prerequisite is an existing STEP 7 Standard/Professional installation.	**6ES7822-1AA03-0XC3**
• PowerPack & upgrade from STEP 7 V5.4/V5.5, ... to STEP 7 Professional 2010/V13, Floating License. Prerequisite is an existing STEP 7 Standard/Professional. Software download incl. license key [1] E-mail address required for delivery	**6ES7822-1AE03-0XC3**
Upgrade STEP 7 Professional V12 to STEP 7 Professional V13, Floating License	**6ES7822-1AA03-0YE5**
Upgrade from STEP 7 Prof. V12 to STEP 7 Professional V13, Floating License, software download incl. license key [1] E-mail address required for delivery	**6ES7822-1AE03-0YE5**
Upgrade from STEP 7 Professional 2006/2010 to STEP 7 Professional 2010/V13, Floating License	**6ES7822-1AA03-0XE5**
Upgrade from STEP 7 Professional 2006/2010 to STEP 7 Professional 2010/V13, Floating License, software download incl. license key [1] E-mail address required for delivery	**6ES7822-1AE03-0XE5**
PowerPack & upgrade from STEP 7 V5.4/V5.5 to STEP 7 Professional 2010/V13, Floating License	**6ES7822-1AA03-0XC5**
PowerPack & upgrade from STEP 7 V5.4/V5.5 to STEP 7 Professional 2010/V13, Floating License, software download incl. license key [1] E-mail address required for delivery	**6ES7822-1AE03-0XC5**
PowerPack STEP 7 Basic V13 to STEP 7 Professional V13, Floating License	**6ES7822-1AA03-0YC5**
Powerpack STEP 7 Basic V13 to STEP 7 Professional V13, Floating License, software downloa d incl. license key [1] E-mail address required for delivery	**6ES7822-1AE03-0YC5**
STEP 7 Basic V13, Floating License	**6ES7822-0AA03-0YA5**
STEP 7 Basic V13, Floating License, software download incl. license key [1] E-mail address required for delivery	**6ES7822-0AE03-0YA5**
STEP 7 Basic V13, Trial License	**6ES7822-0AA03-0YA7**
Upgrade STEP 7 Basic V12 to STEP 7 Basic V13, Floating License	**6ES7822-0AA03-0YE5**
Upgrade STEP 7 Basic V12 to STEP 7 Basic V13, Floating License, software download incl. license key [1] E-mail address required for delivery	**6ES7822-0AE03-0YE5**

[1] For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

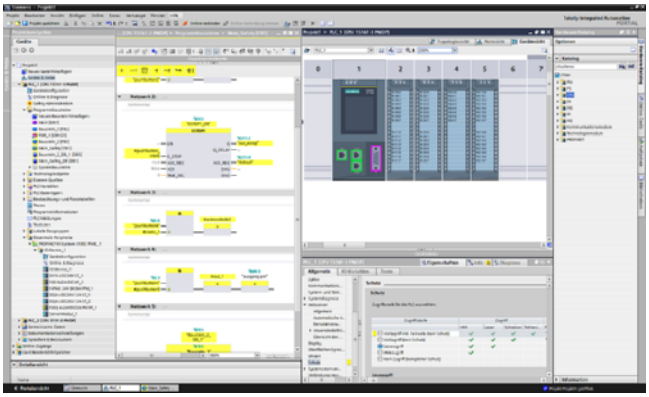
Ordering data

	Article No.
Software Update Service	
For a period of 12 months and for a fixed price, the customer is automatically provided with all upgrades and service packs for each installed software package. The contract is automatically extended by a further year unless canceled at least 12 weeks prior to expiration. Requires the current software version	
Software Update Service (Standard Edition)[2]	
The delivery is implemented according to the number of ordered SUS products (e.g. 10 upgrade packages with 10 DVDs, 10 USB flash drives, etc.)	
• STEP 7 Professional V1x	**6ES7822-1AA00-0YL5**
• STEP 7 Professional and STEP 7 Professional in the TIA Portal	**6ES7810-5CC04-0YE2**
• STEP 7 Basic	**6ES7822-0AA00-0YL0**
Software Update Service (Compact Edition)[2]	
The delivery items are combined. For several contracts, only 1 package with 1 data medium set, 1 USB flash drive with the corresponding number of licenses and the corresponding number of COLs will be supplied.	
Delivery items to be combined must be ordered as one item.	
• STEP 7 Professional V1x	**6ES7822-1AA00-0YM5**
• STEP 7 Professional and STEP 7 Professional in the TIA Portal	**6ES7810-5CC00-0YM2**
• STEP 7 Basic	**6ES7822-0AA00-0YM0**
Software Update Service (download)[2]	
The upgrades and service packs are available for downloading.	
E-mail address required for delivery	
• STEP 7 Professional V1x	**6ES7822-1AE00-0YY0**
• STEP 7 Professional and STEP 7 Professional in the TIA Portal	**6ES7810-5CC04-0YY2**
• STEP 7 Basic	**6ES7822-0AE00-0YY0**

[2] For more information on the Software Update Service, see page 11/2

STEP 7 Safety (TIA Portal)

Overview



- For creating safety-related programs on the STEP 7 operator interface
- For seamless and easy to use integration of safety-related functions into the standard automation
- All the required configuration and programming tools are integrated into the STEP 7 operator interface and utilize a common project structure

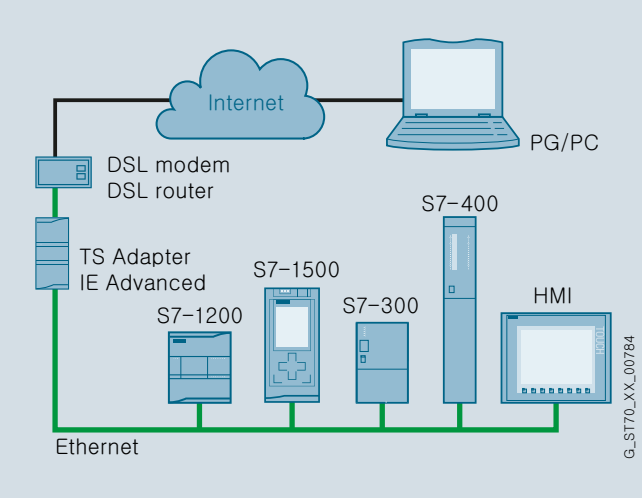
Ordering data

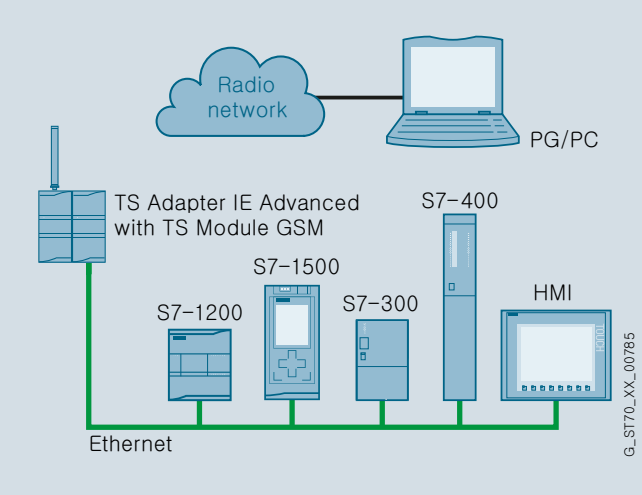
	Article No.
STEP 7 Safety Advanced V13 Task: Engineering tool for configuring fail-safe user programs for SIMATIC S7-1500F, S7-300F, S7-400F, WinAC RTX F, ET200SP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: STEP 7 Professional V13	
Floating license for 1 user	**6ES7833-1FA13-0YA5**
Floating license for 1 user, license key download without software and documentation[2]; email address required for delivery	**6ES7833-1FA13-0YH5**
Software Update Service (Standard Edition)[1] The delivery is implemented according to the number of ordered SUS products (e.g. 10 upgrade packages with 10 DVDs, 10 USB flash drives, etc.) Requires the current software version.	**6ES7833-1FC00-0YX2**
Software Update Service (Compact Edition)[1] The delivery items are combined. For several contracts, only 1 package with 1 data medium set, 1 USB flash drive with the corresponding number of licenses and the corresponding number of COLs will be supplied. The deliveries that are to be grouped together must be ordered as one item. Requires the current software version. Minimum order quantity: 5 units	**6ES7833-1FC00-0YM2**
Software Update Service (download)[1] The upgrades and service packs are available for downloading. E-mail address required for delivery.	**6ES7833-1FC00-0YY0**
STEP 7 Safety Advanced Upgrade	
Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V13 for parallel use; includes software and documentation on DVD; combo license for 1 user	**6ES7833-1FA13-0YF5**
Distributed Safety V5.4 SP5 and STEP 7 Safety Advanced V13 for parallel use; combo license for 1 user, license key and documentation for downloading[2]; E-mail address required for delivery	**6ES7833-1FA13-0YY5**
Upgrade STEP 7 Safety Advanced V11/V12 to STEP 7 Advanced Safety V13; includes software and documentation on DVD; floating license for 1 user	**6ES7833-1FA13-0YE5**
Upgrade STEP 7 Safety Advanced V11/12 to STEP 7 Advanced Safety V13; floating license for 1 user; license key and documentation for downloading[2]; E-mail address required for delivery	**6ES7833-1FA13-0YK5**

[1] For more information on the software update service, see page 11/2.

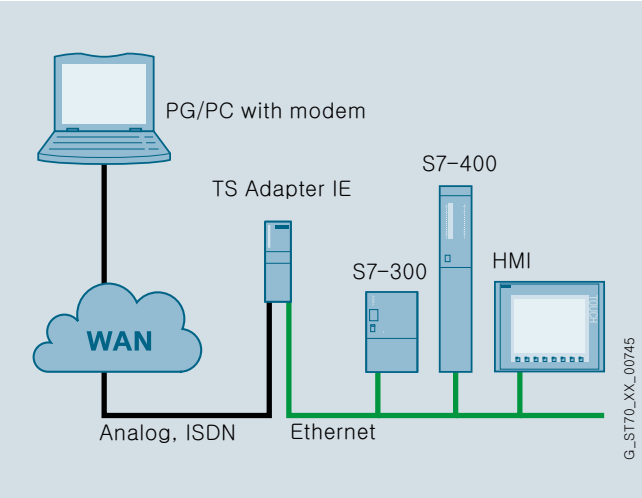
[2] For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

Overview

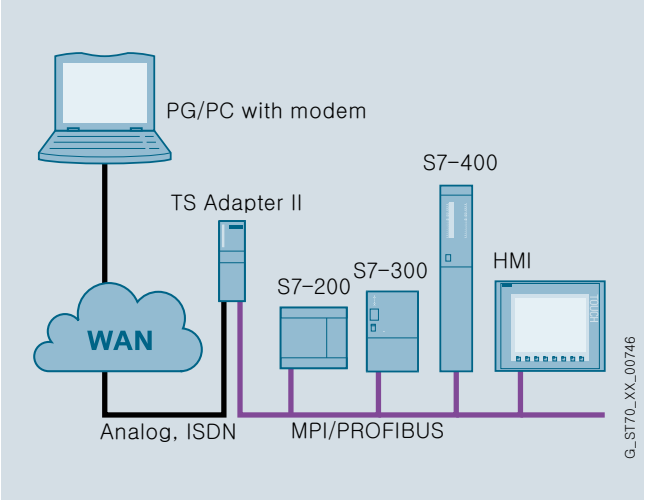




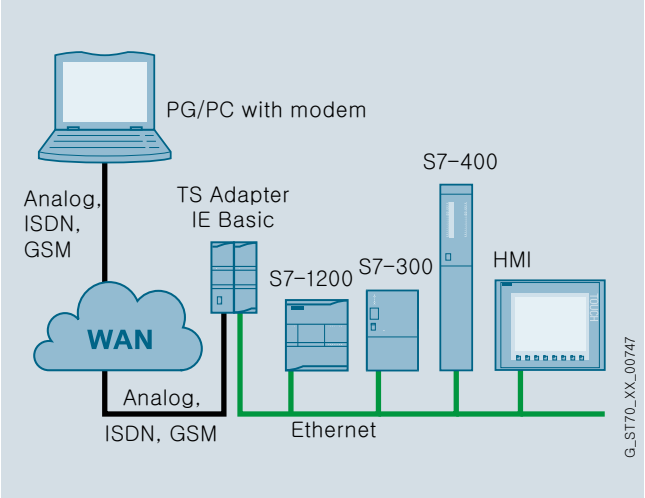
Teleservice with TS Adapter IE Advanced



Teleservice with TS Adapter IE



Teleservice with TS Adapter II



Teleservice with TS Adapter IE Basic

- For performing remote maintenance:
  A programming device/PC with an engineering tool such as STEP 7, or the TIA Portal can access automation components (e.g. S7 CPUs) which are connected to the appropriate adapters over Industrial Ethernet or PROFIBUS.
- Comprising the TeleService software and various adapters:
  - TS Adapter II for connection to PPI, MPI or PROFIBUS DP
  - TS Adapter IE, TS Adapter IE Basic or TS Adapter IE Advanced for connection to Industrial Ethernet
- Additional functions with TS Adapter II:
  - Establishing a connection from/to remote plants, e.g. for calling up process data from an automation system (PG-to-AS remote coupling).
  - Exchanging data between plants (AS-to-AS remote coupling):
    Exchange of process data between two SIMATIC automation systems.
  - Sending a text message:
    Sending a text message from a SIMATIC automation system via a GSM wireless modem.

11

TeleService

Overview (continued)

- Additional functions with TS Adapter IE:
  - Remote operation of HMI devices:
    Access to the HMI device via an Internet browser installed on the adapter
  - Sending e-mails:
    Establishing a modem link to a dial-up server (e.g. to an Internet service provider): A SIMATIC CPU can send e-mails over an e-mail server that can be accessed in this manner.
  - Standard routing:
    A modem link can be established to an Internet service provider for accessing data on the Internet.
- Additional functions with TS Adapter IE Advanced:
  - Remote connection via the Internet

Technical specifications

TS Adapter II	
Dimensions (W x H x D) in mm	125 x 110 x 40
Weight, approx.	250 g
Interfaces	
• to S7/C7	RS 485 (up to 12 Mbit/s)
• to the PC	USB 1.1 (12 Mbit/s)
• to an external modem	RS 232 (up to 115 kbaud)
• to the analog telephone network	RJ12
• to the ISDN telephone network	RJ45
Supply voltage, external or via MPI interface	24 V DC
Current consumption	60 mA (typ.) / 120 mA (max.)
Switch-on current, max.	0.7 A; 8 µs
Degree of protection	IP20
Temperature	
• Operation	± 0 °C to +60 °C
• Storage/transport	-40 °C to +70 °C

TS Adapter IE	
Dimensions (W x H x D) in mm	125 x 110 x 40
Weight, approx.	approx. 370 g
Interfaces	
• Ethernet	RJ45 (10/100 Mbit/s)
• to an external modem	RS 232 (up to 115 kbaud)
• to the analog telephone network	RJ12
• to the ISDN telephone network	RJ45
Supply voltage, external or via MPI interface	24 V DC
Current consumption of the TSA-IE ISDN	typ. 170 mA / max. 230 mA
Current consumption of the modem TSA IE	typ. 180 mA / max. 240 mA
Switch-on current, max.	0.7 A; 8 µs
Degree of protection	IP20
Temperature	
• Operation	± 0 °C to +60 °C
• Storage/transport	-40 °C to +70 °C

TS Adapter IE Basic (basic unit)	
Dimensions (W x H x D) in mm	30 x 100 x 75
Weight, approx.	100 g
Interfaces	
• Ethernet	RJ45 (10/100 Mbit/s)
• To the TS module	Proprietary (can only be used for TS modules)
Supply voltage, external	24 V DC
Current consumption	
• With TS module modem	Typ. 50 mA, max. 80 mA
• with TS module ISDN	Typ. 50 mA, max. 80 mA
• with TS module RS232	Typ. 40 mA, max. 60 mA
• with TS module GSM	Typ. 100 mA, max. 180 mA
Switch-on current, max.	240 mA
Degree of protection	IP20
Temperature	
• Operation	±0 °C to +60 °C (horizontal installation) ±0 °C to +40 °C (vertical installation)
• Storage	40 °C to +70 °C

TS module modem	
Dimensions (W x H x D) in mm, approximately	30 x 100 x 75
Weight, approx.	98 g
ITU transmission standards	• V.21, V.22, V.22bis, V.23, V.32, V.32bis, V.34, V.34x, K56flex, V.90, V.92
Other features	• Error correction and data compression • a/b interface • Hayes (AT) command set • All data formats • Dial procedures: dual-tone multiple-frequency (DTMF), pulse dialing

TS module ISDN	
Dimensions (W x H x D) in mm	30 x 100 x 75
Weight, approx.	92 g
Reports	
• D channel protocols	DSS1 (Euro-ISDN), 1TR6
• B channel protocols	V.110 (9600 bit/s, 19200 bit/s, 38400 bit/s) V.120 (64 Kbit/s) X.75 (64 Kbit/s)
Other features	• Multiple subscriber number (MSN) • AT command interpreter

TS module RS232	
Dimensions (W x H x D) in mm	30 x 100 x 75
Weight, approx.	100 g
Operating mode	Full duplex, asynchronous
Signals	TXD, RXD, DSR, CTS, RTS, DTR, DCD
Data transmission rate	2 400 ... 115 200 bit/s
Message frame	8 data bits (LSB first), no parity bit, 1 stop bit
Rule	according to RS232 standard
Connector	D-sub 9-pin, male (PC COMx)

Technical specifications (continued)

TS module GSM	
Dimensions (W x H x D) in mm	30 x 100 x 75
Weight, approx.	118 g
Transmission rate	
• GPRS Multislot Class 10	
- Up to 2 uplinks	13.4 Kbit/s … 27 Kbit/s upload gross
- Up to 4 downlinks	40 Kbit/s … 54 Kbit/s download gross
Interfaces	
• SIM interface	3 V/1.8 V
• Antenna connection	1 x SMA antenna socket (50 Ohm)
Frequency ranges	Quad band: 850, 900, 1800, 1900 MHz
Transmitted output power	2 W at 850 MHz, 900 MHz 1 W at 1800 MHz, 1900 MHz

TS Adapter IE Advanced	
General information	
Engineering with	
STEP 7 TIA Portal can be configured/integrated as of version	V12 SP1
Installation	
Rail mounting possible	Yes
Wall/direct mounting possible	Yes
Supply voltage	
24 V DC	Yes

TS Adapter IE Advanced	
Permissible range	+19.2 V ... +28.8 V
Input current	
Current consumption, typ.	100 mA
Current consumption, max.	200 mA; incl. TS module GSM
Switch-on current, max.	4.3 A
Activation time, max.	3.1 ms
Power loss	
Power loss, typ.	2.4 W
Interfaces	
Industrial Ethernet	
Industrial Ethernet interface	3x Ethernet (RJ45), 100 Mbit
Interrupts/diagnostics/ status information	
Diagnostics display LED	RUN LED, ERROR LED, MAINT LED, LINK LED, ONLINE LED, VPN LED, RX/TX LED
Insulation	
Insulation tested at	707 V DC (type test)
Dimensions	
W x H x D	55 x 117 x 75 mm
Weight	
Weight, approx.	225 g

Ordering data

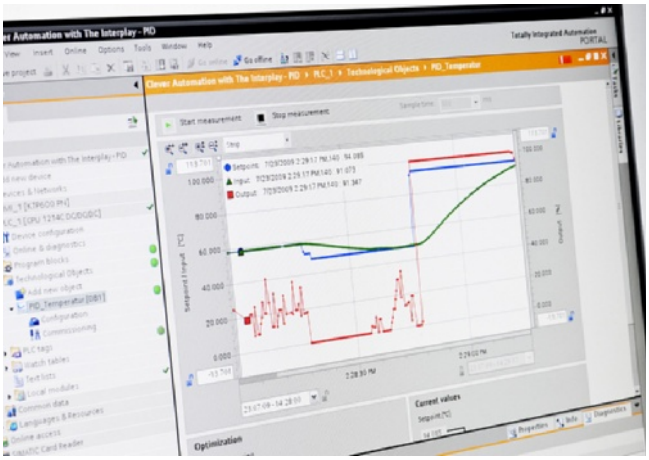
	Article No.
TeleService, Version 6.1 Task: Remote maintenance by means of wired or radio network Target system: SIMATIC S7-200, SIMATIC S7-300, SIMATIC S7-400, SIMATIC C7 Requirement: TS Adapter (STEP 7 not required) Delivery package: on CD; German, English, French, Spanish, Italian; with electronic documentation	
Floating License	**6ES7842-0CE00-0YE0**
Floating License Upgrade (from each previous version)	**6ES7842-0CE00-0YE4**
Software Update Service (requires current software version) [1]	**6ES7842-0CA01-0YX2**
TS Adapter II modem with MPI connection and RS 232; 9-pin, male	**6ES7972-0CB35-0XA0**
TS Adapter II ISDN with MPI connection and RS 232; 9-pin, male	**6ES7972-0CC35-0XA0**
TS Adapter IE modem with Ethernet connection RJ45 (10/100 Mbit/s) and RS 232; 9-pin, male	**6ES7972-0EM00-0XA0**
TS Adapter IE ISDN with Ethernet connection RJ45 (10/100 Mbit/s) and RS 232; 9-pin, male	**6ES7972-0ED00-0XA0**

	Article No.
USB cable for parameterizing the TS Adapter II, it can also be used for programming the connected devices. 5 m long	**6ES7901-0AE00-0XA0**
TS Adapter IE Basic Basic unit	**6ES7972-0EB00-0XA0**
TS module modem	**6ES7972-0MM00-0XA0**
TS module ISDN	**6ES7972-0MD00-0XA0**
TS module RS232	**6ES7972-0MS00-0XA0**
TS module GSM	**6GK7972-0MG00-0XA0**
TS Adapter IE Advanced for accessing automation components via the Internet (GSM, DLS, WAN)	**6ES7972-0EA00-0XA0**
S7 mounting rail adapter for mounting the TS Adapter IE Basic on S7-300 mounting rail, width 60 mm	**6ES7972-0SE00-7AA0**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: 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	**6ES7998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7998-8XC01-8YE2**

[1] For more information on the software update service, see page 11/2.

PID Professional

Overview



- PID Professional combines the two option packages Modular PID Control and Standard PID Control in the TIA Portal.
- Permits the simple integration of continuous PID controllers, pulse controllers and step controllers in the application program.
- Can be used for simple to complex closed-loop control tasks in SIMATIC S7-300 (CPU 313 or higher), S7-400, and WinAC.
- Tuning functionality by means of PID Self-Tuner (part of STEP 7 as of V11 SP1).
- Reduces engineering costs thanks to time-saving parameterization and optimization of the controller.

Ordering data

	Article No.
PID Professional for TIA Portal (engineering software)	
Task: Function blocks and editors for PID controllers Requirement: STEP 7 V12 SP1 and higher Delivery package: on CD	
Full version incl. floating license for the engineering and single license for runtime	**6ES7860-1XA02-0XA5**
Trial version incl. 21-day test license	**6ES7860-1XA02-0XT7**
Upgrade License from Standard PID Control or Modular PID Control V5.1 to PID Professional for TIA Portal	**6ES7860-1XA02-0XE5**
Licenses	
Type of delivery: on USB stick/by download	
Single license (certificate of license) for runtime; per CPU (all versions)	**6ES7860-1XA01-0XB0**
Floating license for the engineering as of V11; Download (e-mail address required for delivery)[1]	**6ES7860-1XA01-0XH5**
Upgrade (Combo License) as of V11; Download (e-mail address required for delivery)[1]	**6ES7860-1XA01-0XK5**

[1] For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

11

Overview

- Option package for creating motion control tasks for CPU 31xT-2 DP and CPU 317TF-2 DP
- Optimal embedding in the automation world thanks to total integration in the STEP 7 tools
- Programming in the standard SIMATIC programming languages LAD, FBD and STL
- Additional Engineering Tools such as S7-SCL or S7-GRAPH can be used

Ordering data

	Article No.
S7-Technology V4.2	
Task: Option package for configuring and programming technology tasks with the SIMATIC S7 CPU 31xT-2 DP and SIMATIC S7 CPU 317TF-2 DP Requirement: STEP 7 V5.5 SP2 and higher Delivery form: on DVD; incl. documentation for CPU 31xT-2 DP, CPU 317TF-2 DP (also on DVD)	
Floating license	**6ES7864-1CC42-0YA5**
Floating License for 1 user, license key download without software or documentation[1]; email address required for delivery	**6ES7864-1CC42-0XH5**
Upgrade to V4.2	**6ES7864-1CC42-0YE5**
Trial License	**6ES7864-1CC42-0YA7**

[1] For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

Easy Motion Control

Overview

- Low-priced package for simple, controlled positioning and simple geared synchronous motion
- For use with any standard variable-speed drive, such as frequency converter or servo drive
- For incremental and absolute encoders

Technical specifications

Supported hardware:

Easy Motion Control is runnable on the following CPUs:

- S7-300.
- S7-400.
- WinAC.
- ET 200S.
- ET 200pro.

Supported modules for the measuring of actual values:

- CPU 314C (FW version 2.0 of the CPU or higher).
- ET 200S 1 Count 5V/500 kHz.
- ET 200S 1 Count 24V/100kHz.
- ET 200S 1SSI.
- SM 338.
- FM 350-1, FM 450-1.
- SIMODRIVE sensor with PROFIBUS DP.
- IM 174.
- Other modules for measuring actual values (using free driver).

Supported modules for setpoint output:

- ET 200S 2AO U.
- SM 332.
- SM 432.
- IM 174.
- Other modules for setpoint output (using free driver).

Supported drives using PROFIBUS DP:

- Micromaster 4.
- SINAMICS G120.
- SINAMICS S120.

Storage space requirements

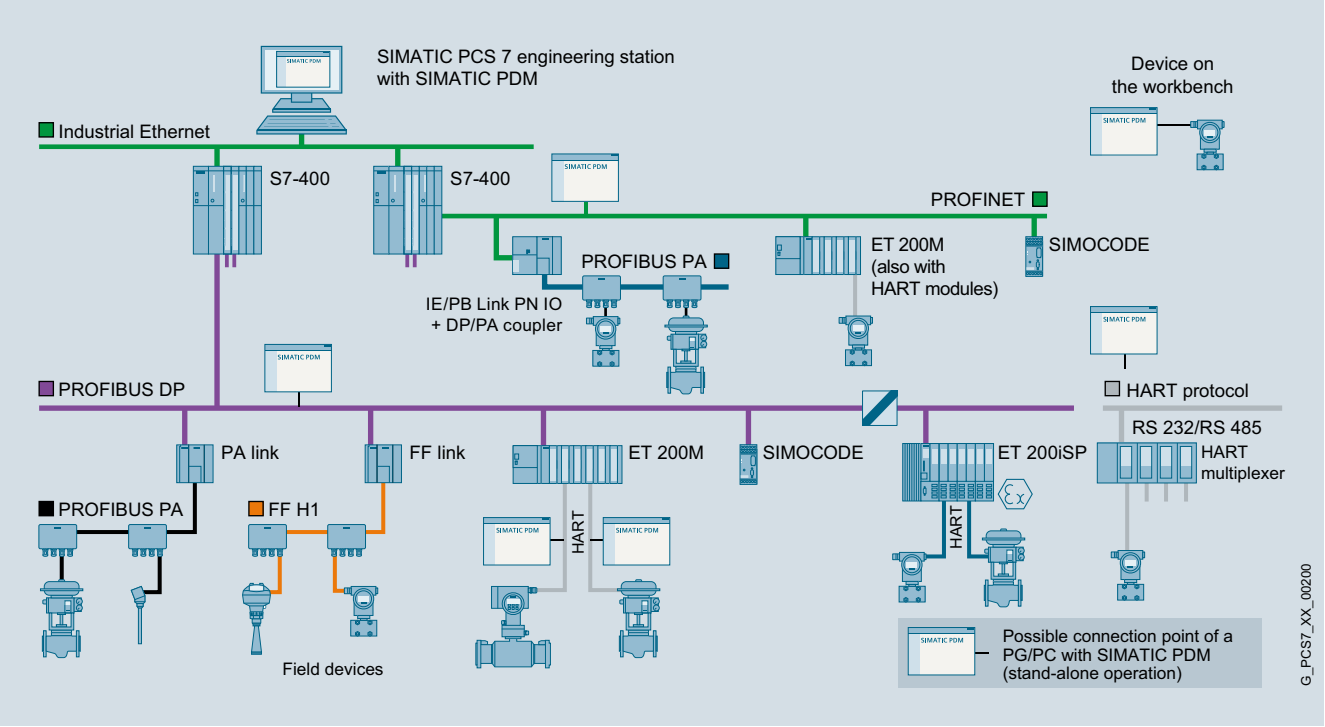
Required main storage in byte		
Block	Required main storage per block	Additional main storage required per instance
MC_Init	1086	-
MC_MoveAbsolute	3924	112
MC_MoveRelative	2982	110
MC_MoveJog	3110	110
MC_Home	2886	104
MC_StopMotion	1114	70
MC_Control	1756	58
MC_Simulation	410	64
MC_GearIn	3476	128
Input driver	1416 ... 2654	76 ... 128
Output driver	384 ... 1242	52 ... 68
Axis data block	-	294

Ordering data

	Article No.
Easy Motion Control V2.1	
Requirement: STEP 7 V5.3 SP2 Delivery package: Software and documentation in 6 languages on CD	
Floating License	**6ES7864-0AC01-0YX0**
Easy Motion Control for TIA Portal	
Requirement: STEP 7 V12 SP1 or higher Delivery package: Software and documentation in 6 languages on CD	
21-day trial license	**6ES7864-2XA02-0XT7**
Floating license and single license (Runtime)	**6ES7864-2XA02-0XA5**
Floating license for downloading by e-mail, valid for V11 or higher (e-mail address required for delivery[1]))	**6ES7864-2XA01-0XH5**
Easy Motion Control Runtime License	
Type of delivery: CoL for one Runtime single license (valid for Easy Motion Control V2.x and V11 or higher), without software or documentation	**6ES7864-0AF01-0YX0**

[1] For up-to-date information and download availability, see: http://www.siemens.com/tia-online-software-delivery

Overview



Configuration options with SIMATIC PDM

SIMATIC PDM (Process Device Manager) is a universal, vendor-independent tool for the configuration, parameter assignment, 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 2 500 devices from Siemens and over 200 vendors worldwide on *one* homogeneous user interface.

The user interface satisfies the requirements of the VDI/VDE GMA 2187 and IEC 65/349/CD directives. Parameters and functions for all supported devices are displayed in a consistent and uniform fashion independent of their communications interface. Even complex devices with several hundred parameters can be represented clearly and processed quickly. Using SIMATIC PDM it is very easy to navigate in highly complex stations such as remote I/Os and even connected field devices.

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 follow-up costs.

SIMATIC PDM supports the operative system management in particular through:

- Uniform presentation and operation of devices
- Uniform representation of diagnostics information
- Indicators for preventive maintenance and servicing
- Detection of changes in the project and device
- Increasing the operational reliability
- Reducing the investment, operating and maintenance costs
- Forwarding of device information to higher-level Maintenance Stations

When used in SIMATIC PCS 7, SIMATIC PDM is integrated in the asset management of the process control system. You can change directly to the SIMATIC PDM views from the diagnostics faceplates in the Maintenance Station.

The Process Device Manager provides more detailed information for all devices described by means of an Electronic Device Description (EDD), e.g.:

- Detailed diagnostics information (manufacturer information, information on error diagnostics and troubleshooting, further documentation)
- Results of internal condition monitoring functions
- Status information (e.g. local configuration changes)
- Information on changes (audit trail report)
- Parameter information

SIMATIC PDM

Technical specifications

	SIMATIC PDM V6.1	SIMATIC PDM V8.1
Hardware	• PG/PC/notebook with processor corresponding to operating system requirements	• PG/PC/notebook with processor corresponding to operating system requirements
Operating systems (alternative)	• Microsoft Windows XP Professional SP3, 32-bit • Microsoft Windows Server 2003 R2 SP2, 32-bit, Standard Edition	• Windows XP Professional SP3 (32-bit) • Windows Server 2003 SP2 Standard Edition (32-bit) • Windows Server 2003 R2 SP2 Standard Edition (32-bit) • Windows 7 Professional/Ultimate/Enterprise SP1 (32-bit/64-bit) • Windows Server 2008 SP2 Standard Edition (32-bit) • Windows Server 2008 R2 SP1 Standard Edition (64-bit)
Integration in STEP 7/PCS 7	• STEP 7 V5.3+SP2 • STEP 7 V5.4+SP5 • STEP 7 V5.5 or V5.5+SP1/SP2/SP3 • SIMATIC PCS 7 V6.1+SP4 • SIMATIC PCS 7 V7.1 or V7.1+SP1/SP2/SP3 • SIMATIC PCS 7 V8.0 or V8.0+SP1	• SIMATIC PCS 7 V8.0+SP1 (SIMATIC PCS 7 V8.0 without PROFINET communication) • STEP 7 V5.5+SP3 (STEP 7 V5.5+SP2 without PROFINET communication)

Ordering data

SIMATIC PDM V8.1

	Article No.
SIMATIC PDM stand-alone product packages	
Minimum configuration	
SIMATIC PDM Single Point V8.1 for operation and configuration of one field device; communication via PROFIBUS DP/PA, HART (modem, RS 232, PROFIBUS/PROFINET), Modbus, Ethernet or PROFINET, including 1 TAG cannot be expanded with respect to functions or with TAG option/PowerPack 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional 32-bit, Windows 7 Ultimate 32/64-bit, Windows Server 2003 R2 Standard 32-bit, or Windows Server 2008 R2 Standard 64-bit, floating license for 1 user	
• Delivery form package SIMATIC PDM software and device library on DVD, license key on USB stick, certificate of license	**6ES7658-3HA18-0YA5**
• Delivery form online Software image download (SIMATIC PDM and device library), license key download, online certificate of license Note: E-mail address required!	**6ES7658-3HA18-0YH5**

	Article No.
Basic configuration for individual product packages	
SIMATIC PDM Basic V8.1 Product package for operation and configuration of field devices and components; communication via PROFIBUS DP/PA, HART (modem, RS 232, PROFIBUS/PROFINET), Modbus, Ethernet or PROFINET, including 4 TAGs 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional 32-bit, Windows 7 Ultimate 32/64-bit, Windows Server 2003 R2 Standard 32-bit, or Windows Server 2008 R2 Standard 64-bit, floating license for 1 user	
• Delivery form package SIMATIC PDM software and device library on DVD, license key on USB stick, certificate of license	**6ES7658-3AB18-0YA5**
• Delivery form online Software image download (SIMATIC PDM and device library), license key download, online certificate of license Note: E-mail address required!	**6ES7658-3AB18-0YH5**

Ordering data

	Article No.
Application-specific configuration for mobile service	
SIMATIC PDM Service V8.1 Product package for stand-alone user in service, with • SIMATIC PDM Basic • 100 TAGs 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional 32-bit, Windows 7 Ultimate 32/64-bit, Windows Server 2003 R2 Standard 32-bit, or Windows Server 2008 R2 Standard 64-bit, floating license for 1 user	
• Delivery form package SIMATIC PDM software and device library on DVD, license key on USB stick, certificate of license	**6ES7658-3JD18-0YA5**
• Delivery form online Software image download (SIMATIC PDM and device library), license key download, online certificate of license Note: E-mail address required!	**6ES7658-3JD18-0YH5**
Application-specific configuration for integration in SIMATIC S7 configuration environment	
SIMATIC PDM S7 V8.1 Product package for use in a SIMATIC S7 engineering environment, with - SIMATIC PDM Basic and Extended - Integration in STEP 7/PCS 7 - 100 TAGs 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional 32-bit, Windows 7 Ultimate 32/64-bit, Windows Server 2003 R2 Standard 32-bit, or Windows Server 2008 R2 Standard 64-bit, floating license for 1 user Note: SIMATIC PDM S7 V8.1 requires the installation of STEP 7 V5.5+SP2/SP3! PROFINET communication is supported as of STEP 7 V5.5+SP3.	
• Delivery form package SIMATIC PDM software and device library on DVD, license key on USB stick, certificate of license	**6ES7658-3KD18-0YA5**
• Delivery form online Software image download (SIMATIC PDM and device library), license key download, online certificate of license Note: E-mail address required!	**6ES7658-3KD18-0YH5**

	Article No.
Optional product components for SIMATIC PDM V8.1	
SIMATIC PDM Extended V8.1 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional 32-bit, Windows 7 Ultimate 32/64-bit, Windows Server 2003 R2 Standard 32-bit, or Windows Server 2008 R2 Standard 64-bit, floating license for 1 user	
• Delivery form package License key on USB stick, certificate of license	**6ES7658-3NX18-2YB5**
• Delivery form online License key download, online certificate of license Note: E-mail address required!	**6ES7658-3NX18-2YH5**
SIMATIC PDM Integration in STEP 7/SIMATIC PCS 7 V8.1 only required for integration of SIMATIC PDM into HW Config 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional 32-bit, Windows 7 Ultimate 32/64-bit, Windows Server 2003 R2 Standard 32-bit, or Windows Server 2008 R2 Standard 64-bit, floating license for 1 user	
• Delivery form package License key on USB stick, certificate of license	**6ES7658-3BX18-2YB5**
• Delivery form online License key download, online certificate of license Note: E-mail address required!	**6ES7658-3BX18-2YH5**
SIMATIC PDM Routing V8.1 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional 32-bit, Windows 7 Ultimate 32/64-bit, Windows Server 2003 R2 Standard 32-bit, or Windows Server 2008 R2 Standard 64-bit, floating license for 1 user	
• Delivery form package License key on USB stick, certificate of license	**6ES7658-3CX18-2YB5**
• Delivery form online License key download, online certificate of license Note: E-mail address required!	**6ES7658-3CX18-2YH5**
SIMATIC PDM Communication FOUNDATION Fieldbus V8.1 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional 32-bit, Windows 7 Ultimate 32/64-bit, Windows Server 2003 R2 Standard 32-bit, or Windows Server 2008 R2 Standard 64-bit, floating license for 1 user	
• Delivery form package (without SIMATIC PCS 7 Software Media Package) License key USB stick, certificate of license	**6ES7658-3QX18-2YB5**
• Delivery form online (without SIMATIC PCS 7 Software Media Package) License key download, online certificate of license Note: E-mail address required!	**6ES7658-3QX18-2YH5**

SIMATIC PDM

Ordering data	Article No.
SIMATIC PDM HART Server V8.1 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional 32-bit, Windows 7 Ultimate 32/64-bit, Windows Server 2003 R2 Standard 32-bit, or Windows Server 2008 R2 Standard 64-bit, floating license for 1 user	
• Delivery form package (without SIMATIC PCS 7 Software Media Package) License key USB stick, certificate of license	**6ES7658-3EX18-2YB5**
• Delivery form online (without SIMATIC PCS 7 Software Media Package) License key download, online certificate of license Note: E-mail address required!	**6ES7658-3EX18-2YH5**
SIMATIC PDM Command Interface V8.1 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional 32-bit, Windows 7 Ultimate 32/64-bit, Windows Server 2003 R2 Standard 32-bit, or Windows Server 2008 R2 Standard 64-bit, floating license for 1 user	
• Delivery form package (without SIMATIC PCS 7 Software Media Package) License key USB stick, certificate of license	**6ES7658-3SX18-2YB5**
SIMATIC PDM TAGs for SIMATIC PDM V8.1	
SIMATIC PDM TAGs TAG licenses for expanding SIMATIC PDM product packages V7.0 or higher, can be accumulated, software class A, floating license for 1 user	
• Delivery form package License key on USB stick, certificate of license	
- 10 TAGs	**6ES7658-3XC00-2YB5**
- 100 TAGs	**6ES7658-3XD00-2YB5**
- 1 000 TAGs	**6ES7658-3XE00-2YB5**
• Delivery form online License key download, online certificate of license Note: E-mail address required!	
- 10 TAGs	**6ES7658-3XC00-2YH5**
- 100 TAGs	**6ES7658-3XD00-2YH5**
- 1 000 TAGs	**6ES7658-3XE00-2YH5**
Demonstration software	
SIMATIC PDM Demo V8.1 Storage functions, export/import and advanced functionality disabled; communication functions restricted 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional 32-bit, Windows 7 Ultimate 32/64-bit, Windows Server 2003 R2 Standard 32-bit or Windows Server 2008 R2 Standard 64-bit Delivery form package SIMATIC PDM software and device library on DVD	**6ES7658-3GX18-0YT8**

SIMATIC PDM V6.1

	Article No.
SIMATIC PDM stand-alone product packages	
Minimum configuration	
SIMATIC PDM Single Point V6.1 for operation and configuration of one field device; communication via PROFIBUS DP/PA, HART modem or Modbus, including 1 TAG cannot be expanded with respect to functions or with TAG option/PowerPack 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery form package SIMATIC PDM software and device library on CD/DVD, license key on USB stick, certificate of license	**6ES7658-3HX16-0YA5**
Basic configuration for individual product packages	
SIMATIC PDM Basic V6.1 Product package for operator input and configuration of field devices and components, communication via PROFIBUS DP/PA, HART (modem, RS 232, PROFIBUS), SIREC bus, SIPART DR, Modbus or Ethernet, including 4 TAGs 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery form package SIMATIC PDM software and device library on CD/DVD, license key on USB stick, certificate of license	**6ES7658-3AX16-0YA5**
Application-specific configuration for mobile service	
SIMATIC PDM Service V6.1 Product package for stand-alone user in service, with • SIMATIC PDM Basic V6.1 • 128 TAGs 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery form package SIMATIC PDM software and device library on CD/DVD, license key on USB stick, certificate of license	**6ES7658-3JX16-0YA5**

Ordering data

	Article No.
SIMATIC PDM system-integrated product packages	
Application-specific configuration for integration in SIMATIC S7 configuration environment	
SIMATIC PDM S7 V6.1 Product package for use in a SIMATIC S7 configuration environment, with • SIMATIC PDM Basic V6.1 • Integration in STEP 7/PCS 7 • 128 TAGs 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery form package SIMATIC PDM software and device library on CD/DVD, license key on USB stick, certificate of license	**6ES7658-3KX16-0YA5**
Optional product components for SIMATIC PDM V6.1	
SIMATIC PDM integration in STEP 7/SIMATIC PCS 7 V6.1 only required for integration of SIMATIC PDM into HW Config 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery form package License key on USB stick, certificate of license	**6ES7658-3BX16-2YB5**
SIMATIC PDM Routing V6.1 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery form package License key on USB stick, certificate of license	**6ES7658-3CX16-2YB5**
SIMATIC PDM Communication via standard HART multiplexer V6.1 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/ Server 2003, floating license for 1 user Delivery form package License key on USB stick, certificate of license	**6ES7658-3EX16-2YB5**

	Article No.
TAG options/PowerPacks for SIMATIC PDM V6.1	
SIMATIC PDM TAG option for TAG expansion, additive to SIMATIC PDM Basic V6.1 Software class A, runs with Windows XP Professional/Server 2003, floating license for 1 user Delivery form package License key on USB stick, certificate of license	
• Up to 128 TAGs	**6ES7658-3XA16-2YB5**
• Up to 512 TAGs	**6ES7658-3XB16-2YB5**
• Up to 1 024TAGs	**6ES7658-3XC16-2YB5**
• Up to 2 048 TAGs	**6ES7658-3XD16-2YB5**
SIMATIC PDM PowerPack for TAG expansion, for any SIMATIC PDM V6.1 product packages Software class A, runs with Windows XP Professional/Server 2003, floating license for 1 user Delivery form package License key on USB stick, certificate of license	
• 128 TAGs to 512 TAGs	**6ES7658-3XB16-2YD5**
• 512 TAGs to 1 024 TAGs	**6ES7658-3XC16-2YD5**
• 1 024 TAGs to 2 048 TAGs	**6ES7658-3XD16-2YD5**
• 2 048 TAGs to unlimited TAGs	**6ES7658-3XH16-2YD5**
Demonstration software	
SIMATIC PDM Demo V6.1 Without online communication and storage functionality 6 languages (English, German, French, Italian, Spanish, Chinese), software class A, runs with Windows XP Professional/Server 2003 Delivery form package (without SIMATIC PCS 7 Software Media Package) SIMATIC PDM software and device library on CD/DVD	**6ES7658-3GX16-0YC8**

Notes

SIMATIC programming devices

12

Brochures

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

www.siemens.com/simatic/printmaterial

Field PG M4

Overview

- The mobile, industry-standard programming device with a powerful, third-generation Intel® Core™ i processor
- Optimal for commissioning, service and maintenance of automation systems.
- Industrial notebook with wireless technology, large 15.6" widescreen display, long battery life, high-speed RAM, and integral data backup concept.
- Complete with all commonly used interfaces for industrial applications.

Technical specifications

	SIMATIC Field PG M4
General features	
Design	Notebook
Processor	• Intel Celeron 1020E processor, 2.2 GHz, 2 MB cache • Intel Core i5-3320M processor, up to 3.3 GHz, 3 MB cache • Intel Core i7-3520M processor, up to 3.6 GHz, 4 MB cache
RAM	Expandable up to 16 GB DDR3 SODIMM
Free slots for expansions	• 1 x PC Card (Type I, Type II) • 1 x Express Card (34 and 54 mm)
Graphics	Intel HD4000 graphics with a resolution of 2560 x 1600 pixels for i5 and i7 processors
Display	15.6" widescreen display, 16:9 format • 1366 x 768 (HD ready) • 1920 x 1080 (full HD)
Speakers	Built-in stereo speakers
Pointing device	Touchpad with 2 mouse buttons
Operating system	• Windows XP Prof. SP3 32 Bit • Windows 7 Ultimate SP1 64 Bit • Dual boot (Windows XP Prof. SP3 and Windows 7 Ultimate SP1 64 Bit)
Power supply	Wide-range power supply unit 100-240 V AC, 50-60 Hz, high-power 8800 mAh lithium-ion battery (running time of more than 5 hours; discharge time of more than 5 months when not in use)
Warranty conditions	24 months for hardware components (6 months for battery[1])
Drives	
Hard disk	Easily to replace hard drive (250 or 500 GB HDD) or super-fast solid-state drive (300 or 480 GB SSD)
Optical drive	Multistandard DVD+-R/+-RW

	SIMATIC Field PG M4
Interfaces	
PROFIBUS DP/MPI	CP 5711-compatible, 9.6 Kbit/s to 12 Mbit/s, 9-pin sub D socket; can also be used in virtual operating systems
COM 1	V.24/TTY (for SIMATIC S5; TTY as optional version); over supplied adapter on 9-pin sub-D male connector
SIMATIC Memory Card	Programming interface for SIMATIC Memory Card and S5 memory module (S5 EPROM module as optional equipment variant)
SIMATIC Micro Memory Card	Interface for SIMATIC Micro Memory Card
Media Card Reader	Interface for SMC (SIMATIC Memory Card) SD/SHC xD-Picture Card MS Pro
Ethernet	2 x Gigabit Ethernet (RJ45)
USB	2 x USB 3.0, max.1 high current (900 mA); under Windows XP as USB 2.0 2 x USB 2.0, for High Speed USB; max. 2 High Current (500 mA) or 1 A ; of which 1 USB interface with charging function for mobile devices in power off mode
PC Card (PCMCIA)/Express Card/54	• 1 x PC Card (Type I, Type II) • 1 x Express Card (34 and 54 mm)
DVI-I	1 interface for external monitor (VGA monitors can be operated with a DVI/VGA adapter)
DPP (Display Port)	Interface for external monitor, max. resolution: 2560 x 1600 pixels
WLAN[2]	Integrated, IEEE802.11 a, b, g, n
Headphones/microphone	Connection in each case for 3.5 mm stereo jack

Technical specifications (continued)

	SIMATIC Field PG M4
Ambient conditions	
Degree of protection in accordance with IEC 60529	Front IP30 when covers closed
Vibrations	Tested in accordance with DIN IEC 60068-2-6
• Operation	10 to 58 Hz: Amplitude 0.0375 mm, 58 to 500 Hz: Acceleration 4.9 m/s^2
• Transport	5 to 9 Hz: Amplitude 3.5 mm; 9 to 500 Hz: Acceleration 9.8 m/s^2
Resistance to 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)	
• Radiated interference	EN 61000-6-3:2007, EN 61000-3-2 Class D and EN 61000-3-3
• Immunity to conducted interference on the supply lines	± 2 kV; (according to IEC 61000-4-4; burst) ± 1 kV; (according to IEC 61000-4-5; surge sym./line to line) ± 2 kV; (according to IEC 61000-4-5; surge sym./line to ground)
• Noise immunity on signal lines	± 1 kV; (according to IEC 61000-4-4; burst; length < 30 m) ± 2 kV; (according to IEC 61000-4-4; burst; length > 30 m) ± 2 kV; (according to IEC 61000-4-5; surge sym./line to ground; length > 30 m)
• Immunity to static discharge	± 4 kV discharge on contact (in accordance with IEC 61000-4-2: ESD) ± 8 kV discharge to air (in accordance with IEC 61000-4-2: ESD)
• Immunity to high frequency radio interference	10 V (with modem operation max. 3 V), with 80% amplitude modulation with 1 kHz, 10 kHz ... 80 MHz (in accordance with IEC 61000-4-6) 10 V/m (with modem operation max. 3 V/m), with 80% amplitude modulation with 1 kHz, 80 MHz ... 1000 MHz and 1.4 GHz ... 2 GHz (in accordance with IEC 61000-4-3) 1 V/m, with 80% amplitude modulation with 1 kHz, 2.0 GHz ... 2.7 GHz 1 V/m (in accordance with IEC 61000-4-3)
• Immunity to magnetic fields	100 A/m; 50/60 Hz (in accordance with IEC 61000-4-8)

	SIMATIC Field PG M4
Temperature	Tested in accordance with IEC 60068-2-1, IEC 60068-2-2
• Operation[3]	+ 5 °C ... + 40 °C max. 10°C/h (no condensation)
• Storage/transport	- 20 °C ... + 60 °C max. 20°C/h (no condensation)
Relative humidity	Tested according to IEC 60068-2-78, IEC 60068-2-30, IEC 60068-2-14
• Operation	5 % ... 80% at 25°C/h (no condensation)
• Storage/transport	5 % ... 95% at 25°C/h (no condensation)
Safety	
Safety class	Safety class II according to IEC 61140
Safety regulations	• According to VDE 0805 in conformance with IEC 60950-1:2006 • IEC 60950-1:2005 • EN 60950-1:2006 with change EN 60950-1:2006/A11:2009 • DIN EN 60950-1(VDE0805-1):2006-11 with change DIN EN 60950-1/A11 (VDE0805-1/A11):2009-11 • UL 60950-1 Second Edition • CAN/CSA-C22.2 No. 60950-1-07 Second Edition
Dimensions and weights	
Dimensions (W x H x D) in mm	385 x 53 x 275
Weight, approx.	Without battery approx. 3 kg With battery approx. 3.4 kg

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 over the course of time. With normal use, the battery can be charged and discharged over a period of six months from when the Field PG is purchased. Loss of capacity 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) Integral WLAN with antennas specially designed for the Field PG M4. The integrated wireless LAN is approved for operation in Europe (CE), USA (FCC), Canada (IC), Korea (KCC) and China (CCC). For operation outside these countries, the relevant national regulations must be observed.

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

Field PG M4

Ordering data

	Article No.
SIMATIC Field PG M4 Standard programming device	**6ES7716- 0 A A ■ ■ -0 ■ ■ 3**
Intel Celeron 1020E processor, 2 MB cache, 2.2 GHz, 250 GB HDD SATA hard disk, multistandard DVD+-R/+-RW drive, Intel HD graphics; without SIMATIC S5 interface, without SIMATIC S5 EPROMMER	
Display	
• 15.6" display, HD ready (1366 x 768)	0
• 15.6" display, full HD (1920 x 1080)	1
Keyboard and power cable (essential)	
• Keyboard: QWERTY (& German); power supply cord: Germany, France, The Netherlands, Spain, Belgium, Austria, Sweden, Finland	0
• Keyboard: QWERTY (& German); power supply cord: United Kingdom	1
• Keyboard: QWERTY (& German); power supply cord: Switzerland	2
• Keyboard: QWERTY (& German); power supply cord: USA	3
• Keyboard: QWERTY (& German); power supply cord: Italy	4
• Keyboard: QWERTY (& German); power supply cord: China; approval for China (CCC)	5
• Keyboard: AZERTY; power supply cord: Germany, France, The Netherlands, Spain, Belgium, Austria, Sweden, Finland	6
• Keyboard: AZERTY; power supply cord: Switzerland	7
Operating system	
• Windows 7 Ultimate, SP1, 64-bit (Eng., Fr., Ger., Sp., It., selectable); STEP 5 and STEP 7 Micro/Win not pre-installed. STEP 5 cannot run on Windows 7; installed main memory: 1 x 8 GB DDR3 RAM	B
• Windows 7 Ultimate, SP1, 64-bit (Eng., Fr., Ger., Sp., It., selectable); STEP 5 and STEP 7 Micro/Win not pre-installed. STEP 5 cannot run on Windows 7; installed main memory: 2 x 8 GB DDR3 RAM	C
SIMATIC software licenses	
• Trial license: STEP 7 Prof. Combo (STEP 7 Prof. V13 and STEP 7 Prof. 2010), WinCC Adv. Combo (WinCC V13 and WinCC flexible 2008), STEP 7 Micro/Win V4.1	A
• License: STEP 7 Prof. Combo (STEP 7 Prof. V13 and STEP 7 Prof. 2010), WinCC Adv. Combo (WinCC V13 and WinCC flexible 2008), STEP 7 Micro/Win V4.1	B

	Article No.
Programming device Field PG M4 Premium and Premium Plus	**6ES7716- ■ ■ ■ ■ ■ -0 ■ ■ 3**
Field PG M4 Premium: Intel Core i5 3320M processor, 3 MB cache, 2.6 GHz (max. 3.3 GHz with turbo boost technology), multistandard DVD+-R/+-RW drive, Intel HD4000 graphics card	1
Field PG M4 Premium Plus: Intel Core i7 3520M processor, 4 MB cache, 2.9 GHz (max. 3.6 GHz with turbo boost technology), multistandard DVD+-R/+-RW drive, Intel HD4000 graphics card	2
Hard disk	
• 500 GB HDD SATA (for Field PG M4 Premium and Premium Plus)	B
• 300 GB SSD SATA (for Field PG M4 Premium and Premium Plus)	C
• 480 GB SSD SATA (for Field PG M4 Premium and Premium Plus)	D
SIMATIC S5 interface	
• Without S5 interface, without S5 EPROMMER	A
• With S5 interface, with S5 EPROMMER incl. S5 PLC cable and EPROM adapter	B
Display	
• 15.6" display, HD ready (1366 x 768)	0
• 15.6" display, full HD (1920 x 1080)	1
Keyboard and power cable (essential)	
• Keyboard: QWERTY (& German); power supply cord: Germany, France, The Netherlands, Spain, Belgium, Austria, Sweden, Finland	0
• Keyboard: QWERTY (& German); power supply cord: United Kingdom	1
• Keyboard: QWERTY (& German); power supply cord: Switzerland	2
• Keyboard: QWERTY (& German); power supply cord: USA	3
• Keyboard: QWERTY (& German); power supply cord: Italy	4
• Keyboard: QWERTY (& German); power supply cord: China; approval for China (CCC)	5
• Keyboard: AZERTY; power supply cord: Germany, France, The Netherlands, Spain, Belgium, Austria, Sweden, Finland	6
• Keyboard: AZERTY; power supply cord: Switzerland	7

Ordering data

	Article No.
Programming device Field PG M4 Premium and Premium Plus	**6ES7716- ■ ■ ■ ■ ■ -0 ■ ■ 3**
Operating system	
• Windows XP Professional SP3 32-bit MUI (Eng., Ger., Fr., It., Sp.); installed RAM: 1 x 4 GB DDR3 RAM STEP 7 Professional V13 and WinCC Advanced V13 not pre-installed.	**A**
• Windows 7 Ultimate, SP1, 64-bit (Eng., Fr., Ger., Sp., It., selectable); STEP 5 and STEP 7 Micro/Win not pre-installed. STEP 5 cannot run on Windows 7; installed main memory: 1 x 8 GB DDR3 RAM	**B**
• Windows 7 Ultimate, SP1, 64-bit (Eng., Fr., Ger., Sp., It., selectable); STEP 5 and STEP 7 Micro/Win not pre-installed. STEP 5 cannot run on Windows 7; installed main memory: 2 x 8 GB DDR3 RAM	**C**
• Dual-boot: Windows XP Professional SP3 64-bit and Windows 7 Ultimate SP1 64-Bit; installed main memory: 1 x 8 GB DDR3 RAM	**D**
• Dual-boot: Windows XP Professional SP3 64-bit and Windows 7 Ultimate SP1 64-Bit; installed main memory: 2 x 8 GB DDR3 RAM	**E**
SIMATIC software licenses	
• Trial license: STEP 7 Prof. Combo (STEP 7 Prof. V13 and STEP 7 Prof. 2010), WinCC Adv. Combo (WinCC V13 and WinCC flexible 2008), STEP 7 Micro/Win V4.1	**A**
• License: STEP 7 Prof. Combo (STEP 7 Prof. V13 and STEP 7 Prof. 2010), WinCC Adv. Combo (WinCC V13 and WinCC flexible 2008), STEP 7 Micro/Win V4.1	**B**
• License: STEP 7 Prof. Combo (STEP 7 Prof. V13 and STEP 7 Prof. 2010), WinCC Adv. Combo (WinCC V13 and WinCC flexible 2008), STEP 7-Micro/Win V4.1, STEP 5; incl. MPI cable	**C**
Accessories	
Memory expansion	
4 GB RAM	**6ES7648-2AH60-0KA0**
8 GB RAM	**6ES7648-2AH70-0KA0**
AC/DC external power supply unit	**6ES7798-0GA03-0XA0**
For Field PG M4 only	
Power cord (length 3 m)	
For Field PG M2/M4 only	
For Germany, France, The Netherlands, Spain, Belgium, Austria, Sweden, Finland	**6ES7900-5AA00-0XA0**
For Great Britain	**6ES7900-5BA00-0XA0**
For Switzerland	**6ES7900-5CA00-0XA0**
For the USA	**6ES7900-5DA00-0XA0**
For Italy	**6ES7900-5EA00-0XA0**
For China	**6ES7900-5FA00-0XA0**

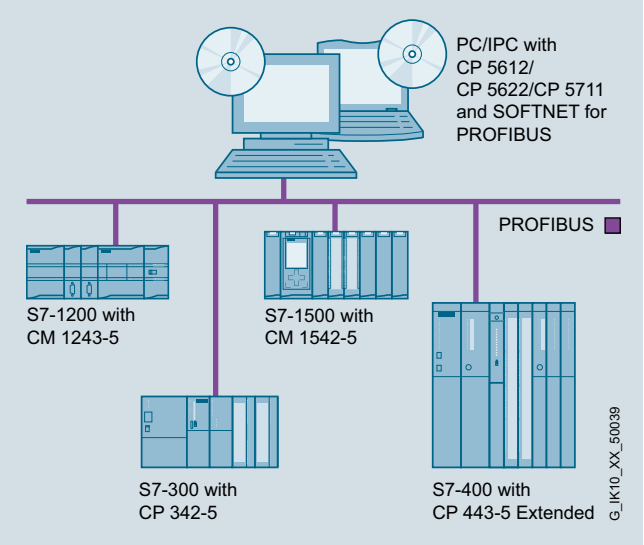
	Article No.
Spare battery (lithium ion, 8.8 Ah)[1)]	**6ES7798-0AA07-0XA0**
For Field PG M4 only	
MPI cable	**6ES7901-0BF00-0AA0**
For connecting a PG and SIMATIC S7 via MPI; 5 m	
S5 EPROM programming adapter	**6ES7798-0CA00-0XA0**
For SIMATIC S5 EPROM programming using the Field PG	
S5 PLC cable	**6ES5734-2BF00**
For connecting programming devices to SIMATIC S5 PLCs, 5 m	
Replaceable hard disk kit	**6ES7791-2BA01-0AA0**
Replaceable hard disk 500 GB serial ATA; with protective pocket and Torx screwdriver; for Field PG M3/M4 only	
Replaceable SSD kit	
Replaceable SSD 300 GB serial ATA; with protective pocket and Torx screwdriver; for Field PG M3/M4 only	**6ES7791-2BA20-0AA0**
Replaceable SSD 480 GB serial ATA; with protective pocket and Torx screwdriver; for Field PG M3/M4	**6ES7791-2BA21-0AA0**
Adapter serial ATA to USB 3.0	**6ES7790-1AA01-0AA0**
For using the removable hard disk in the hard disk kit as an external hard disk (only for Field PG M4)	
Rucksack for Field PG M4	**6ES7798-0DA02-0XA0**
SIMATIC IPC Image & Partition Creator V3.3	**6ES7648-6AA03-3YA0**
Software tool for very easy preventive data backup and efficient partition management on SIMATIC IPCs	
Software Update Service (Standard Edition)[2)]	
The delivery is implemented according to the number of ordered SUS products (e.g. 10 upgrade packages with 10 DVDs, 10 USB flash drives, etc.)	
• STEP 7 Professional and STEP 7 Professional in the TIA Portal	**6ES7810-5CC04-0YE2**
• WinCC Advanced	**6AV6613-0AA00-0AL0**

1) The capacity of the battery decreases for technological reasons with each charging/discharging cycle and also as the result of being stored at excessively high or low temperatures. The running time per charge decreases therefore over the course of time. With normal use, the battery can be charged and discharged over a period of six months from when the Field PG is purchased. Loss of capacity 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) For more information on the Software Update Service, see page 11/2.

SOFTNET for PROFIBUS

Overview



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

- Software for connecting 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 corresponding OPC servers are included in the scope of supply of the respective communication software

Technical specifications

Performance data	CP 5612/CP 5622/CP 5711
Mono protocol mode	
Number of connectable DP slaves	max. 60
Number of FDL tasks waiting	max. 50
Number of PG/OP and S7 connections	max. 8
• DP master	DP-V0, DP-V1 with SOFTNET-PB DP
• DP slave	DP-V0, DP-V1 with SOFTNET-PB DP slave

Ordering data

	Article No.
SOFTNET-PB S7	
Software for S7 communication, incl. FDL protocol with OPC server and configuration tool, runtime software, software and electronic manual on DVD-ROM, license key on USB stick, Class A; for CP 5612 (Win 7 and higher), CP 5622 (Win 7 and higher), CP 5711	
SOFTNET-PB S7 V12	
For 32/64-bit: Windows 7 Professional/Ultimate; for 32/64-bit: Windows 8 Pro; for 64-bit: Windows 2008 Server R2; for 64-bit: Windows 2012 Server; German/English	
• Single License for one installation	**6GK1704-5CW12-0AA0**
Software Update Service For 1 year, with automatic extension; requirement: Current software version	**6GK1704-5CW00-3AL0**
Upgrade	
• From Edition 2006 to SOFTNET-S7 Edition 2008 or V12	**6GK1704-5CW00-3AE0**
• From V6.0, V6.1, V6.2 or V6.3 to SOFTNET-S7 Edition 2008 or V12	**6GK1704-5CW00-3AE1**
SOFTNET-PB DP	
Software for DP protocol (master Class 1 and 2), incl. FDL protocol with OPC server and configuration tool; runtime software, software and electronic manual on DVD-ROM, license key on USB stick; for CP 5612 (Win 7 and higher), CP 5622 (Win 7 and higher), CP 5711	
SOFTNET-PB DP V12	
For 32/64-bit: Windows 7 Professional/Ultimate; for 32/64-bit: Windows 8 Pro; for 64-bit: Windows 2008 Server R2; for 64-bit: Windows 2012 Server; German/English	
• Single License for one installation	**6GK1704-5DW12-0AA0**
Software Update Service For 1 year, with automatic extension; requirement: Current software version	**6GK1704-5DW00-3AL0**
Upgrade	
• From Edition 2006 to SOFTNET-DP Edition 2008 or V12	**6GK1704-5DW00-3AE0**
• From V6.0, V6.1, V6.2 or V6.3 to SOFTNET-DP Edition 2008 or V12	**6GK1704-5DW00-3AE1**

Ordering data

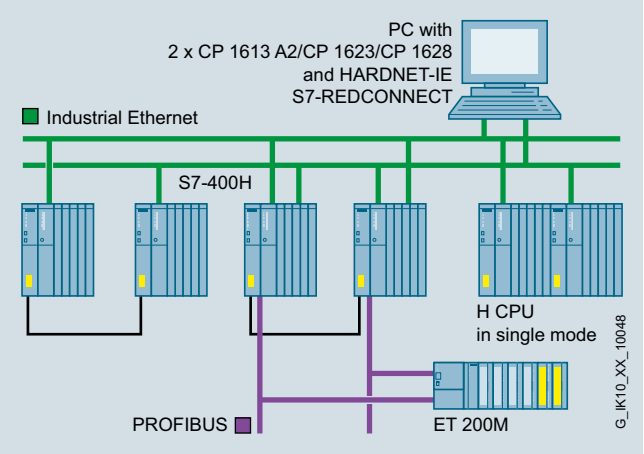
	Article No.
SOFTNET-PB DP slave	
Software for DP slave, with OPC server and configuration tool,single license for one installation, runtime software, software and electronic manual on DVD-ROM, license key on USB stick, Class A; for CP 5612 (Win 7 and higher), CP 5622 (Win 7 and higher), CP 5711	
SOFTNET-PB DP slave V12	
For 32/64-bit: Windows 7 Professional/Ultimate; for 32/64-bit: Windows 8 Pro; for 64-bit: Windows 2008 Server R2; for 64-bit: Windows 2012 Server; German/English	
• Single License for one installation	**6GK1704-5SW12-0AA0**
Software Update Service	**6GK1704-5SW00-3AL0**
For 1 year, with automatic extension; requirement: Current software version	
Upgrade	
• From Edition 2006 to SOFTNET-DP Slave Edition 2008 or V12	**6GK1704-5SW00-3AE0**
• From V6.0, V6.1, V6.2 or V6.3 to SOFTNET-DP Slave Edition 2008 or V12	**6GK1704-5SW00-3AE1**

Note
The Windows XP software version is still available for older CPs; see the Industry Mall:
http://www.siemens.com/industrymall.

12

HARDNET-IE S7-REDCONNECT

Overview



System configuration for S7-REDCONNECT

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

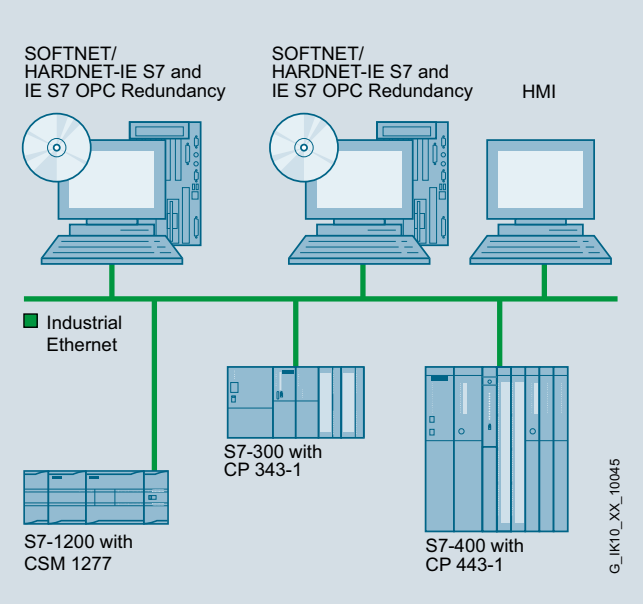
G_K10_XX_1084

- 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 redundant Layer 2 or Layer 3 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)

Ordering data

	Article No.
HARDNET-IE S7-REDCONNECT	
Software for fail-safe S7 communication via redundant networks, incl. S7 OPC server, HARDNET-IE S7, runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A;	
For CP 1613 A2, CP 1623, CP 1628	
HARDNET-IE S7-REDCONNECT V12	
For 32/64-bit: Windows 7 Professional/Ultimate; for 64-bit: Windows 2008 Server R2 for 32/64-bit Windows 8 Pro; for Windows Server 2012 German/English	
• Single License for one installation	**6GK1716-0HB12-0AA0**
Software Update Service	**6GK1716-0HB00-3AL0**
For one year with automatic extension; requirement: current software version	
Upgrade	
• As of Edition 2006 to S7-REDCONNECT Edition 2008 or HARDNET-IE S7-REDCONNECT V12	**6GK1716-0HB00-3AE0**
• From V6.0, V6.1, V6.2 or V6.3 to S7-REDCONNECT Edition 2008 or HARDNET-IE S7-REDCONNECT V12	**6GK1716-0HB00-3AE1**
For CP 1613 A2, CP 1623, CP 1628	
HARDNET-IE S7-REDCONNECT PowerPack	
For expansion from HARDNET-IE S7 to HARDNET-IE S7-REDCONNECT / from S7-1613 to S7 REDCONNECT, Single License for one installation, runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A;	
HARDNET-IE S7-REDCONNECT PowerPack V12	**6GK1716-0HB12-0AC0**
For 32/64-bit: Windows 7 Professional/Ultimate; for 64-bit: Windows 2008 Server R2; for 32/64-bit Windows 8 Pro; for Windows Server 2012 German/English;	
CP 1613 A2 communications processor	**6GK1161-3AA01**
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 HARDNET-IE S7 and S7-REDCONNECT, for operating system support see SIMATIC NET Software	
CP 1623 communications processor	**6GK1162-3AA00**
PCI Express x1 card for connection to Industrial Ethernet (10/100/1000 Mbit/s), with 2-port switch (RJ45) via HARDNET-IE S7 and S7-REDCONNECT. For operating system support, see SIMATIC NET Software	
CP 1628 communications processor	**6GK1162-8AA00**
PCI Express x1 card for connection to Industrial Ethernet (10/100/1 000 Mbit/s), with 2-port switch (RJ45) and integrated security (firewall, VPN) via HARDNET-IE S7 and S7-REDCONNECT. For operating system support, see SIMATIC NET Software	

Overview



System configuration SOFTNET for Industrial Ethernet

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

G_IK10_XX_10185

- Software for coupling programming devices/workstations to automation systems
- Communication services:
  - PG/OP communication
  - S7 communication
  - Open communication (SEND/RECEIVE)
- Can be used with
  - Layer 2 Ethernet card (PCI/PCIe), e.g. CP 1612 A2
  - Integrated Industrial Ethernet interface
  - Modem/ISDN (Remote Access Service RAS)
- Complete protocol stack as a software package
- Increased availability thanks to additional option packages such as OPC Server Redundancy

Technical specifications

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

Ordering data

	Article No.
SOFTNET S7 for Industrial Ethernet	
Software for S7 and open communication, incl. OPC server, PG/OP communication, and NCM PC / STEP 7 Professional V12, runtime software, software and electronic manual on CD-ROM, license key on a USB stick, Class A	
SOFTNET-IE S7 V12	
For 32/64-bit Windows 7 Professional/Ultimate for 64-bit: Windows 2008 Server R2 for 32/64-bit Windows 8 Pro for Windows Server 2012 German/English	
Up to 64 connections	
• Single License for one installation	**6GK1704-1CW12-0AA0**
Software Update Service	**6GK1704-1CW00-3AL0**
For 1 year with automatic extension; requirement: current software version	
Upgrade	
• from Edition 2006 to Edition 2008 or V12	**6GK1704-1CW00-3AE0**
• from V6.0, V6.1, V6.2 or V6.3 to Edition 2008 or V12	**6GK1704-1CW00-3AE1**
SOFTNET-IE S7 REDCONNECT VM V12	
Software for fail-safe S7 communication via redundant networks, incl. S7 OPC server, HARDNET-IE S7, runtime software, software and electronic manual on CD-ROM, license key on USB stick, Class A for 32/64-bit: Windows 7 Professional/Ultimate for 64-bit: Windows 2008 Server R2 for 32/64-bit Windows 8 Pro for Windows Server 2012 German/English	
• Single License for one installation	**6GK1704-0HB12-0AA0**
SOFTNET-IE S7 Lean Edition V12	
Up to eight connections	
• Single License for one installation	**6GK1704-1LW12-0AA0**
Software Update Service	**6GK1704-1LW00-3AL0**
For 1 year with automatic extension Requirement: Current software version	
Upgrade	
• from Edition 2006 to Edition 2008 or V12	**6GK1704-1LW00-3AE0**
• from V6.0, V6.1, V6.2 or V6.3 to Edition 2008 or V12	**6GK1704-1LW00-3AE1**

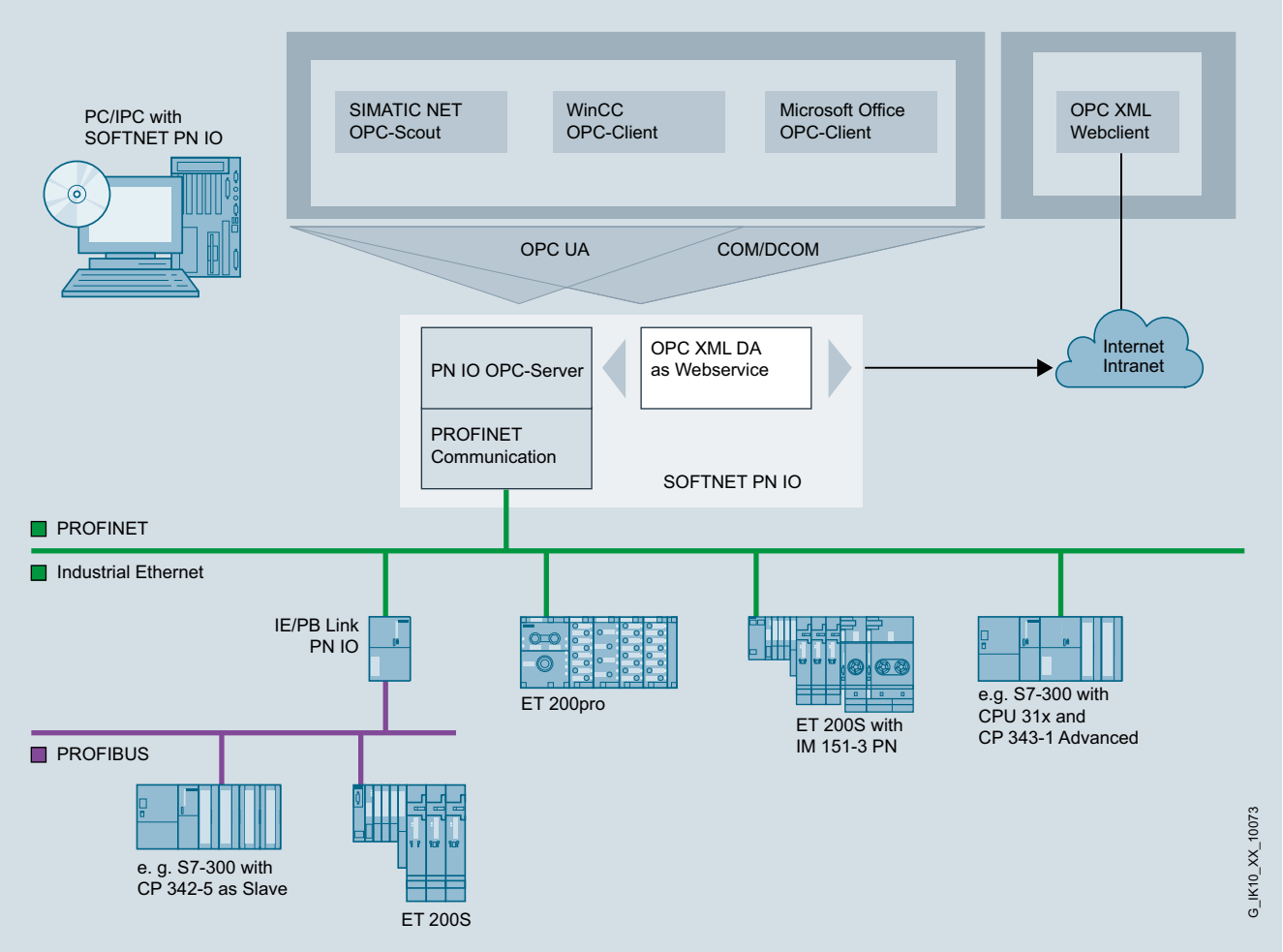
SOFTNET for Industrial Ethernet

Ordering data

	Article No.
SOFTNET-PG 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	
SOFTNET-IE PG V12	
For 32/64-bit: Windows 7 Professional/Ultimate; for 64-bit: Windows 2008 Server R2 for 32/64-bit Windows 8 Pro for Windows Server 2012 German/English	
• Single License for one installation	**6GK1704-1PW12-0AA0**
Software update	**6GK1704-1PW00-3AL0**
For 1 year with automatic extension Requirement: Current software version	

	Article No.
Upgrade	
• from Edition 2006 to Edition 2008 or V12	**6GK1704-1PW00-3AE0**
• from V6.0, V6.1, V6.2 or V6.3 to Edition 2008 or V12	**6GK1704-1PW00-3AE1**
IE S7 OPC Redundancy	
Software for redundant OPC servers in the environment of Industrial Ethernet software, S7 products, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A	
IE S7 OPC Redundancy V12	
For 64-bit: Windows 2008 Server R2; German/English	
• Single License for one installation	**6GK1706-1CW12-0AA0**

Overview



PC with SOFTNET PN IO as PROFINET IO Controller

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

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- 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
  - Layer 2 Ethernet card (PCI/PCIe), e.g. CP 1612 A2
  - Integral Industrial Ethernet interfaces of SIMATIC programming devices/PCs
- Cost-effective solution for the low-end performance range
- OPC server for I/O connection over PROFINET included in scope of delivery

SOFTNET PN IO

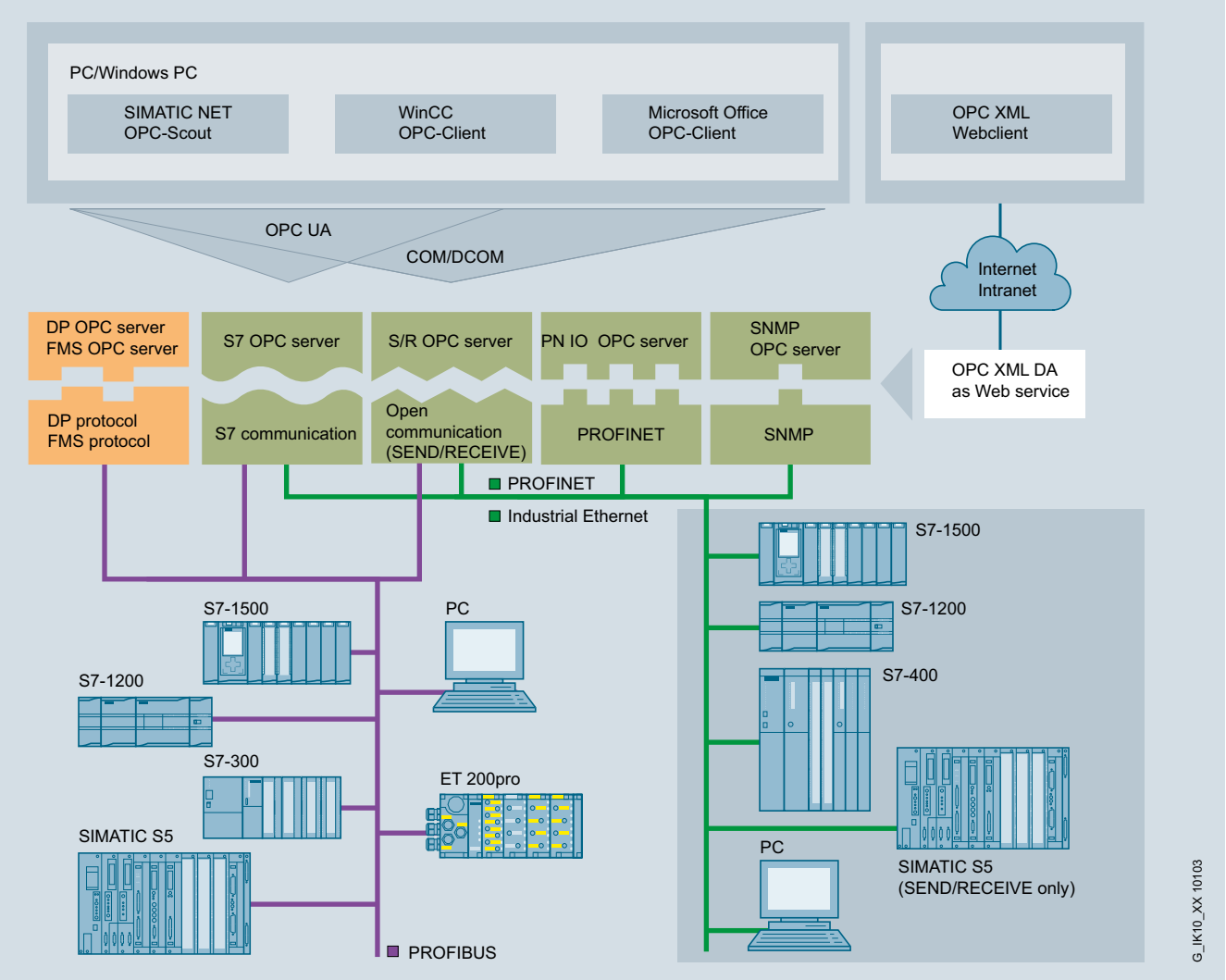
Technical specifications

	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

	Article No.
SOFTNET PN IO	
Software for PROFINET IO Controller with OPC server and NCM PC / STEP7 Professional V12, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A	
SOFTNET-IE PN IO V12	
For 32/64-bit Windows 7 Professional/Ultimate for Windows 2008 Server R2 for 32/64 Bit Windows 8 Pro for Windows Server 2012 German/English	
• Single License for one installation	**6GK1 704-1HW12-0AA0**
Software Update Service	**6GK1704-1HW00-3AL0**
For 1 year with automatic extension Requirement: current software version	
Upgrade	
• from Edition 2006 to SOFTNET PN IO Edition 2008 or V12	**6GK1704-1HW00-3AE0**
• from V6.0, V6.1, V6.2 or V6.3 to SOFTNET PN IO Edition 2008 or V12	**6GK1704-1HW00-3AE1**

Overview



System integration with OPC server

OPC (**O**penness, **P**roductivity & **C**ollaboration) is a standardized, open, and vendor-independent interface that is widely used in automation.

A fundamental distinction is made between the classic OPC and its consistent further development OPC UA (**U**nified **A**rchitecture). Smooth migration to the new OPC UA standard is easily possible; this offers further value added, such as security. The SIMATIC NET OPC servers offer the two interfaces OPC UA and classic OPC for SIMATIC S7 and PROFINET.

- The corresponding 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
- Increased availability thanks to additional option packages such as OPC server redundancy
- OPC Scout with browser functionality as an OPC client and OCX Data Control/.NET Data Control for simple OPC client creation

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 or .NET Data Control; for configuring instead of programming • OPC XML-Interface for Data Access

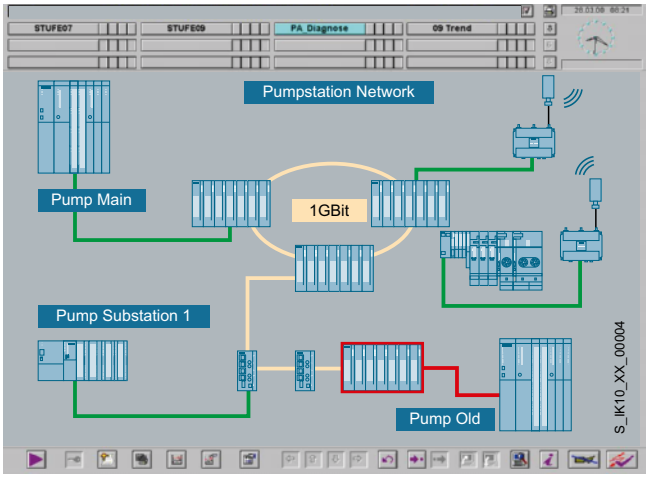
Products	include OPC servers for:
Industrial Ethernet	
• HARDNET-IE S7, SOFTNET-IE S7, SOFTNET-IE S7 Lean	S7-OPC server for S7 communication, XML-DA S5-OPC server for open communication[1] communication, XML-DA
• SNMP OPC server	SNMP OPC server for SNMP protocol access; XML-DA
• S7 OPC Redundancy	Redundant S7-OPC server for S7 communication
PROFINET	
• SOFTNET-IE PN IO	PN IO OPC server for PROFINET IO communication; XML-DA
PROFIBUS	
• HARDNET-PB DP, SOFTNET-PB DP, SOFTNET-PB DP slave	DP-OPC server for PROFIBUS DP communication; XML-DA
• FMS-5613	FMS-OPC server for PROFIBUS FMS communication; XML-DA
• HARDNET-PB S7, SOFTNET-PB S7	S7-OPC server for S7 communication, XML-DA
• S7 OPC Redundancy	Redundant S7-OPC server for S7 communication

[1] also S5-compatible communication

Ordering data

	Article No.
SNMP OPC server Status monitoring of SNMP-capable devices in any OPC client systems; e.g. SIMATIC WinCC/PCS 7	See SNMP OPC server
S7 OPC Redundancy Software for redundant OPC servers in the environment of Industrial Ethernet software, S7 products, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A	
S7 OPC Redundancy V12 For 64-bit: Windows 2008 Server R2; German/English	
• Single License for one installation	**6GK1706-1CW12-0AA0**
Software Update Service For 1 year with automatic extension; requirement: current software version	**6GK1706-1CW00-3AL0**

Overview



- Status monitoring of SNMP-capable devices in any OPC client systems; e.g. SIMATIC WinCC/PCS 7
- Easy access to SNMP-capable devices over the OPC interface
- Devices without SNMP agents can be monitored using the ping mechanism
- Configuration with STEP 7 (up to STEP 7 V5.5) or NCM PC
- Ready-to-use SNMP diagnostics profiles for Siemens devices, e.g. SCALANCE X/W
- Generation of any SNMP diagnostics profiles by means of the integral MIB compiler
- Easy setup of the monitored devices with the help of an Autodiscovery function

Ordering data

	Article No.
SNMP OPC server	
Including MIB compiler; single license for one installation of runtime software; software and electronic manual on CD-ROM; license key on USB stick, Class A	
SNMP OPC Server Basic	
Administration of up to 20 IP addresses	
• **Basic V12** for 32/64-bit: Windows 7 Professional/Ultimate for 64-bit: Windows 2008 Server R2 for 32/64-bit: Windows 8 Pro for Windows Server 2012 Single License for one installation	**6GK1706-1NW12-0AA0**
Software Update Service SNMP OPC Server Basic	**6GK1706-1NW00-3AL0**
For 1 year with automatic extension Requirement: current software version	
Upgrade SNMP OPC Server Basic	
• from Edition 2006 to Edition 2008 or V12	**6GK1706-1NW00-3AE0**
• from V6.0, V6.1, V6.2 or V6.3 to Edition 2008 or V12	**6GK1706-1NW00-3AE1**
SNMP OPC Server Extended	
Administration of up to 200 IP addresses	
• **Extended V12** for 32/64-bit: Windows 7 Professional/Ultimate for 64-bit: Windows 2008 Server R2 for 32/64-bit Windows Pro for Windows Server 2012 Single License for one installation	**6GK1706-1NX12-0AA0**
Software Update Service SNMP OPC Server Extended	**6GK1706-1NX00-3AL0**
For 1 year with automatic extension Requirement: Current software version	
Upgrade SNMP OPC Server Extended	
• from Edition 2006 to Edition 2008 or V12	**6GK1706-1NX00-3AE0**
• from V6.0, V6.1, V6.2 or V6.3 to Edition 2008 or V12	**6GK1706-1NX00-3AE1**
SNMP OPC Server Power Pack	
For upgrade from SNM OPC Server Basic to SNM OPC Server Extended	
PowerPack V12	**6GK1706-1NW12-0AC0**

Notes

Appendix

15

Faster and more applicable know-how: Hands-on training from the manufacturer

Siemens Industry Training provides you with comprehensive support in solving your tasks.

Training by the market leader in the industry 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 Siemens Industry Training

- 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:

www.siemens.com/sitrain

or let us advise you personally.

Siemens Industry Training Customer Support Germany:

Phone: +49 (911) 895-7575

Fax: +49 (911) 895-7576

E-Mail: info@sitrain.com

Highlights Siemens Industry Training

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" is 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 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

Ordering data	Article No.
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC Bus components, SIMATIC C7, SIMATIC Distributed IO, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC Based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	**6ES7998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	**6ES7998-8XC01-8YE2**

CE marking

Overview

The electronic products described in this catalog comply with the requirements and protection objectives of the following EC directives insofar as they relate to the product concerned. They also comply with the corresponding harmonized European standards (EN) published for these products in the Official Journals of the European Community.

- Directive 2004/108/EC of the European Parliament and Council on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive)
- Directive 2006/95/EC of the European Parliament and of the Council on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (Low Voltage Directive)
- Directive 94/9/EC of the European Parliament and the Council on approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres (ATEX Directive).
- Directive 1999/5/EC of the European Parliament and of the Council on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (RTTE Directive)

The originals of the declarations of conformity are kept available by us for the responsible supervisory authorities.

Note on the EMC Directive:

In terms of their interference emissions, SIMATIC products are designed for industrial applications.

If individual products deviate from this specification, it is noted in the catalog with the products.

The installation instructions in the manuals must be adhered to when installing and operating the products described in this catalog. These contain, for example, important information on installation in cabinets and on the use of shielded cables.

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 EN60204-1 (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

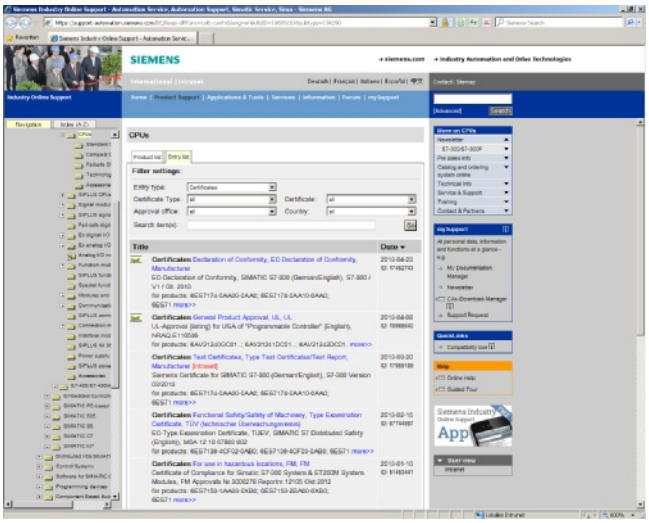
Certificates, authorizations, approbations, declarations of conformity

An overview of the certificates available for SIMATIC products (CE, UL, CSA, FM, shipping authorizations) can be found in the internet at

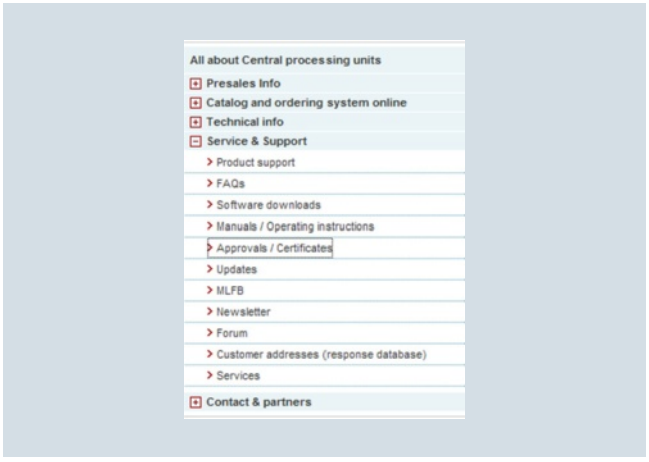
www.siemens.com/simatic/certificates

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 under Product support "Entry list"



or 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.

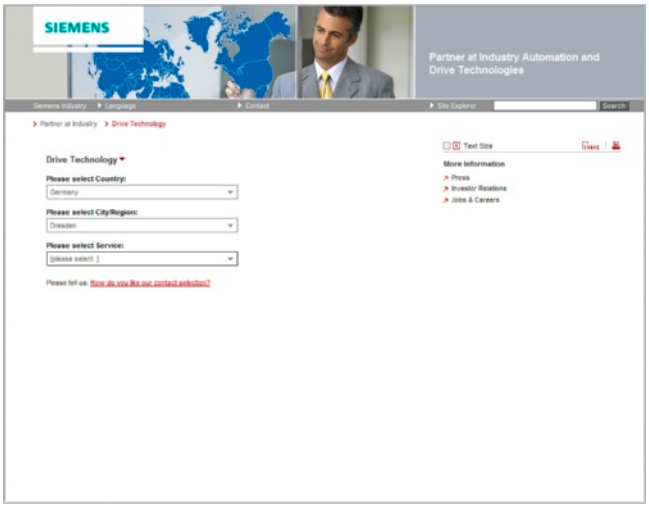
DQS Registered Certificate No.:

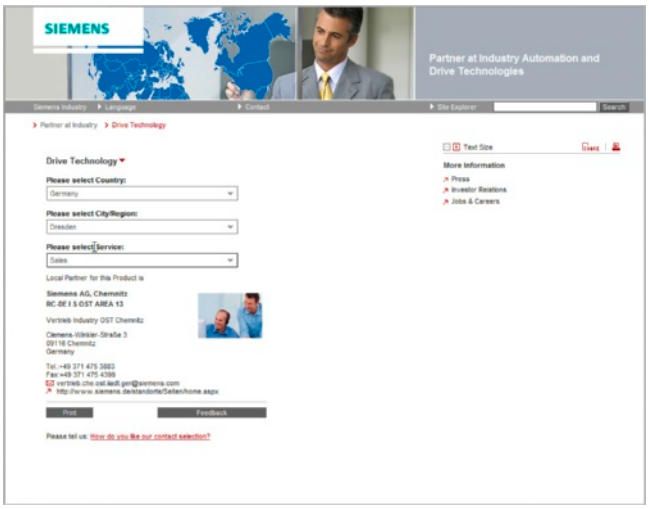
Siemens AG

- I IA AS Industrial Automation Systems
  Reg.No.: 001323 QM08

Siemens contacts worldwide

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: www.siemens.com/automation/partner

You start by selecting a

- Product group,
- Country,
- City,
- Service.

Overview

Siemens Solution Partner Automation Drives

Solution Partner
Automation
Drives

SIEMENS

Solution Partner: Highest quality - guaranteed

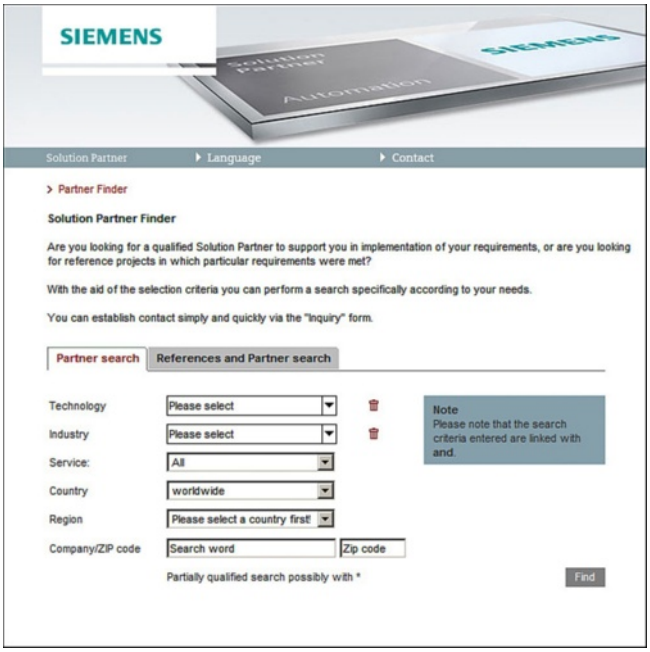
The products and systems from Siemens Industry Automation and Drive Technologies offer the ideal platform for all automation applications.

Under the name of Siemens Solution Partner Automation Drives, selected system integrators around the world act as uniformly qualified solution providers for the Siemens range of products and services in the fields of automation and drives. 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 partner emblem is the guarantee and indicator of proven quality. The basis for this are defined quality features that identify Solution Partners as reliable and competent solution providers:

- Solution quality
  Always a good result with tried and tested solutions expertise.
- Expert quality
  Certified technical competence ensures maximum efficiency.
- Project quality
  With proven project experience straight to the target.
- Portfolio 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 platform 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. Various search criteria are available for this purpose.

Once you have located a partner, you are only one small step away from contacting them.

Find the right partner here for your specific task and convince yourself of the solution competence provided:

www.siemens.com/automation/partnerfinder

Additional information on the Siemens Solution Partner Program is available online at:

www.siemens.com/solutionpartner

Siemens Automation Cooperates with Education

Applicable practical know-how

Comprehensive teaching support for educational institutions

Cooperates with Education

Automation

SIEMENS

Siemens Automation Cooperates with Education (SCE) offers a global system for sustained support of technical skills. SCE supports educational institutions in their teaching assignment in the industrial automation sector and offers added value in the form of partnerships, technical expertise, and know-how. As the technological leader, our comprehensive range of services can support you in the knowledge transfer for Industry 4.0.

Our services at a glance

- Training curriculums for your lessons
- Trainer packages for hands-on learning
- Courses convey up-to-date, specialist knowledge
- Support for your projects/textbooks
- Complete didactic solutions from our partners
- Personal contact for individual support

Training curriculums for your lessons

Use our profound industrial know-how for practice-oriented and individual design of your course. We offer you more than 100 didactically prepared training curriculums on the topics of automation and drives technology free of charge. These materials are perfectly matched to your curricula and syllabuses, and optimally suited for use with our trainer packages. This takes into account all aspects of a modern industrial solution: installation, configuration, programming, and commissioning. All documents, including projects, can be individually matched to your specific requirements.

Particular highlights:

- With the new SIMATIC PCS 7 curriculums and trainer packages, you can pass on basic, practice-oriented PCS 7 knowledge at universities within about 60 hours (= 1 semester), using plant simulation.
- The new TIA Portal training materials for SIMATIC S7-1200 are available in English, German, French, Italian, Spanish and Chinese for download.

www.siemens.com/sce/documents

Trainer packages for hands-on learning

Our SCE trainer packages offer a specific combination of original industrial components which are perfectly matched to your requirements and can be conveniently used in your course. These price reduced bundles available exclusively to schools include innovative and flexible hardware and software packages. SCE can currently offers more than 90 SCE trainer packages including related equipment. These cover both the factory and process automation sectors. You can use them to impart the complete course contents on industrial automation at a very low cost.

Trainer packages are available for:

- Introduction to automation technology with LOGO! logic module and SIMATIC S7-1200 compact controller
- PLC engineering with SIMATIC S7 hardware and STEP 7 software (S7-300, S7-1500 and TIA Portal)
- Operator control and monitoring with SIMATIC HMI
- Industrial networking over bus systems with SIMATIC NET (PROFINET, PROFIBUS, IO-Link)
- Sensor systems with VISION, RFID and SIWAREX
- Process automation with SIMATIC PCS 7
- Power Monitoring Devices SENTRON PAC 4200
- Motor Management SIMOCODE
- Networked drive and motion technologies with SINAMICS/ SIMOTION
- CNC programming with SinuTrain

Important ordering notes:

Only the following institutions are authorized to obtain trainer packages: vocational schools, Colleges and Universities, in-house vocational training departments, non commercial research institutions and non commercial training departments.

To purchase a trainer package, you require a specific end-use certificate, which you can obtain from your regional sales office.

www.siemens.com/sce/tp

Comprehensive teaching support for educational institutions (continued)

Courses convey up-to-date specialist knowledge

Profit from our excellent know-how as the leader in industrial technologies. We offer you specific courses for automation and drive technology worldwide. These support you in the practice-oriented transferring of product and system know-how, are in conformance with curriculums, and derived from the training fields. Compact technical courses especially for use at universities are also available.

Our range of courses comprises a wide variety of training modules based on the principle of Totally Integrated Automation (TIA). The focus is on the same subject areas as with the SCE trainer packages.

Every PLC and drive course is oriented on state-of-the-art technology. Your graduates can thus be prepared optimally for their future professional life.

In some countries we are offering classes based on our training curriculums. Please inquire with your SCE contact partner.

www.siemens.com/sce/contact

Support for your projects/textbooks

Automation and drive technology is characterized by continuous and rapid developments. Service and Support therefore play an important role.

We can provide you with consulting for selected projects and support from your personal SCE contact as well as our web based and regional Customer Support.

As a particular service, SCE supports technical authors with our know-how as well as with intensive technical consulting. Siemens library of special textbooks covering the industrial automation sector provides an additional resource for you and your students. These can be found at the SCE web site.

www.siemens.com/sce/contact
www.siemens.com/sce/books

Complete didactic solutions

Our partners for learning systems offer a wide range of training systems and solutions for use in your courses or laboratory.

These models have been designed based on our trainer packages and thus save you the time and cost of self-construction of individual components. The Partner systems provide you with simple and effective help in the fulfillment of your teaching assignment.

www.siemens.com/sce/partner

Contact for individual support

You can find your personal SCE contact on our Internet site. Your local SCE Promoter will answer all your questions concerning the complete SCE offering, and provide you with timely and competent information about innovations. When you encounter challenges, you can profit from our global team of excellence.

If a direct SCE contact is not listed for your country, please contact your local Siemens office.

www.siemens.com/sce/contact

SCE Support Finder for your Internet request

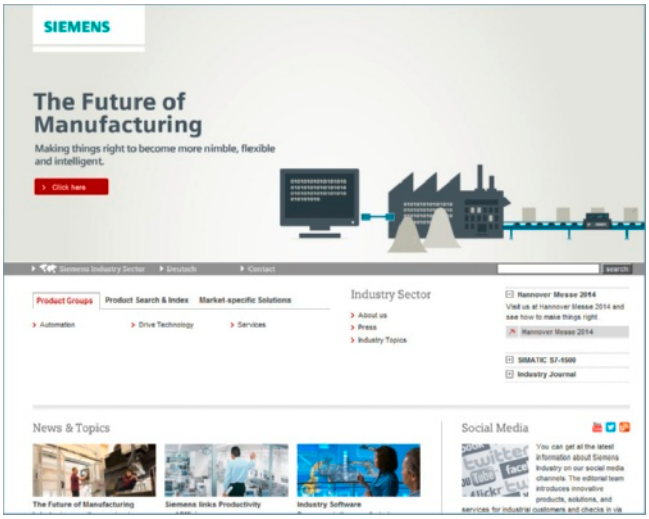
You are an educator and need support on the topic of industry automation? Send us your request:

www.siemens.com/sce/supportfinder

Scan the QR code for further information (SCE homepage)

Information and Ordering in the Internet and on DVD

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

www.siemens.com/industry

you will find everything you need to know about products, systems and services.

Product Selection Using the Interactive Catalog CA 01 of Industry

Detailed information together with convenient interactive functions:
The interactive catalog 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.

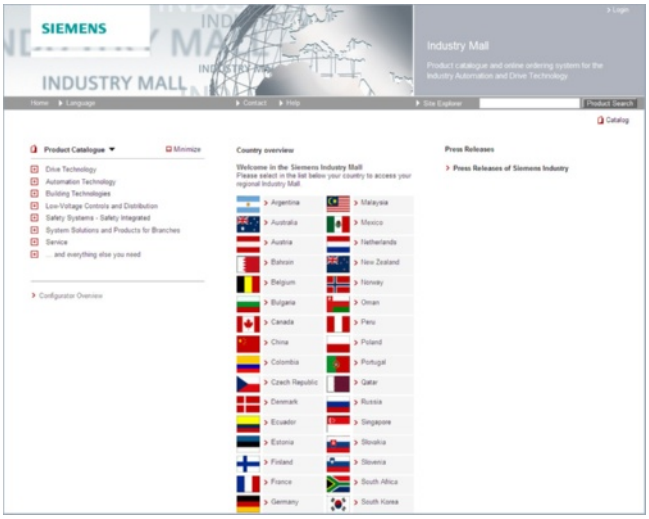
After selecting the product of your choice you can order at the press of a button, by fax or by online link.

Information on the interactive catalog CA 01 can be found in the Internet under

www.siemens.com/automation/ca01

or on DVD.

Easy Shopping with the Industry Mall



The Industry Mall is the electronic ordering platform of Siemens AG on the Internet. Here you have online access to a huge range of products presented in an informative and attractive way.

Data transfer via EDIFACT allows the whole procedure from selection through ordering to tracking and tracing of the order to be carried out. Availability checks, customer-specific discounts and preparation of quotes are also possible.

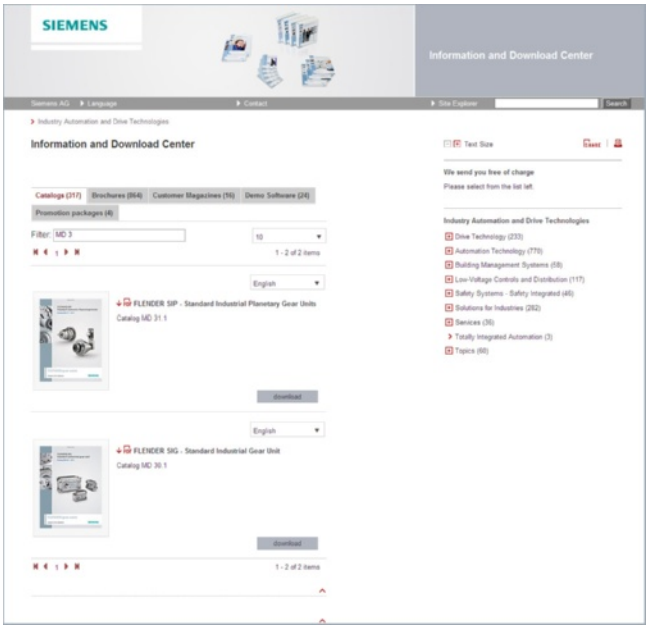
Numerous additional functions are available to support you.

For example, powerful search functions make it easy to select the required products. Configurators enable you to configure complex product and system components quickly and easily. CAx data types are also provided here.

Please visit the Industry Mall on the Internet under:

www.siemens.com/industrymall

Downloading Catalogs



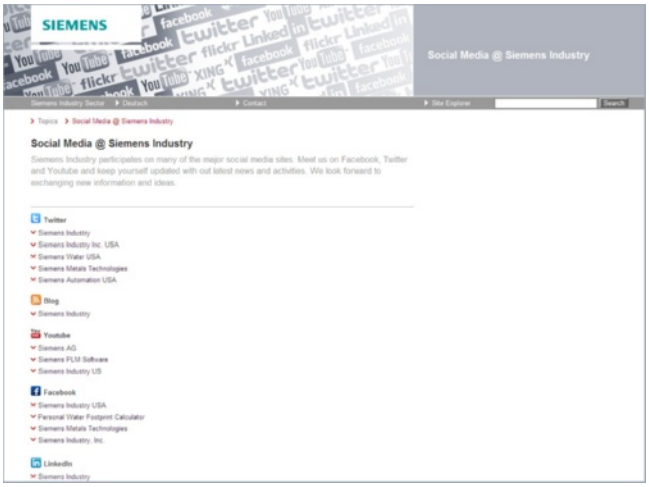
In addition to numerous other useful documents, you can also find the catalogs listed on the back inside cover of this catalog in the Information and Download Center. Without having to register, you can download these catalogs in PDF format or increasingly as digital page-turning e-books.

The filter dialog box above the first catalog displayed makes it possible to carry out targeted searches. If you enter “MD 3” for example, you will find both the MD 30.1 and MD 31.1 catalogs. If you enter “ST 70” both the ST 70 catalog and the associated news or add-ons are displayed.

Visit us on the web at:

www.siemens.com/industry/infocenter

Social Media



Connect with Siemens through social media: visit our social networking sites for a wealth of useful information, demos on products and services, the opportunity to provide feedback, to exchange information and ideas with customers and other Siemens employees, and much, much more. Stay in the know and follow us on the ever-expanding global network of social media.

Connect with Siemens Industry at our central access point:

www.siemens.com/industry/socialmedia

Or via our product pages at:

www.siemens.com/automation

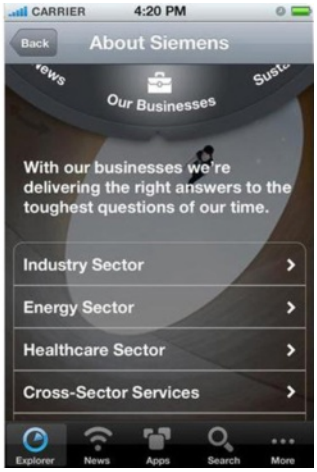
or

www.siemens.com/drives

To find out more about Siemens' current social media activities visit us at:

www.siemens.com/socialmedia

Mobile Media



Discover the world of Siemens.

We are also constantly expanding our offering of cross-platform apps for smartphones and tablets. You will find the current Siemens apps at the app store (iOS) or at Google Play (Android).

The Siemens app, for example, tells you all about the history, latest developments and future plans of the company – with informative pictures, fascinating reports and the most recent press releases.

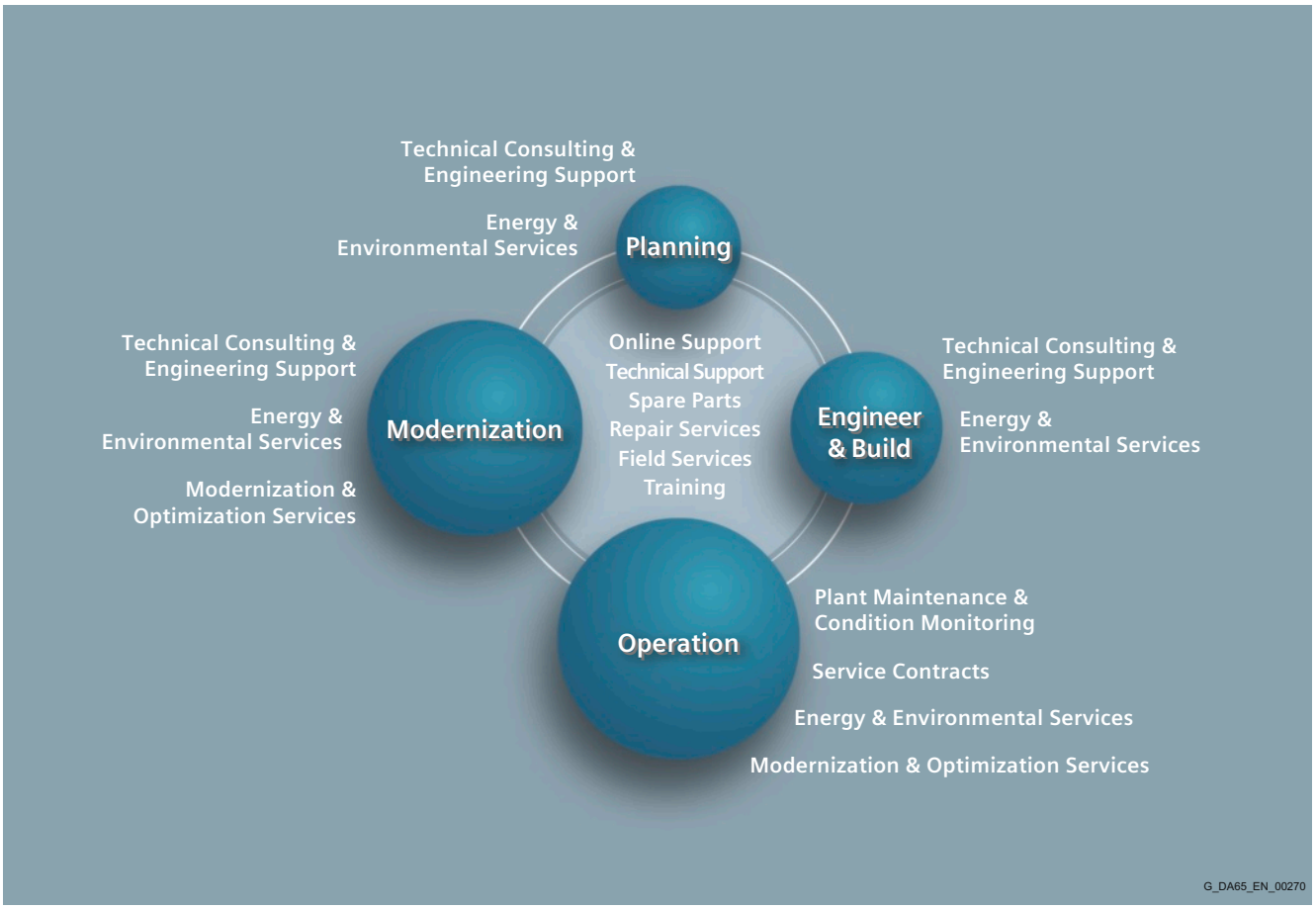
Your machines and plant can do more – with Industry Services.

Whether it is production or process industry - in view of rising cost pressure, growing energy costs, and increasingly stringent environmental regulations, services for industry are a crucial competitive factor in manufacturing as well as in process industries.

All over the world Siemens supports its customers with product, system, and application-related services throughout the entire life cycle of a plant. Right from the earliest stages of planning, engineering, and building, all the way to operation and modernization. These services enable customers to benefit from the Siemens experts' unique technological and product knowledge and industry expertise.

Thus downtimes are reduced and the utilization of resources is optimized. The bottom line: increased plant productivity, flexibility, and efficiency, plus reduced overall costs.

Discover all advantages of our service portfolio:
www.siemens.com/industry-services



Siemens supports its clients with technology based Services across a plants entire life cycle.

Online Support

Online support is a comprehensive information system for all questions relating to products, systems, and solutions that Siemens has developed for industry over time. With more than 300,000 documents, examples and tools, it offers users of automation and drive technology a way to quickly find up-to-date information. The 24-hour service enables direct, central access to detailed product information as well as numerous solution examples for programming, configuration and application.

The content, in six languages, is increasingly multimediabased – and now also available as a mobile app. Online support's "Technical Forum" offers users the opportunity to share information with each other. The "Support Request" option can be used to contact Siemens' technical support experts. The latest content, software updates, and news via newsletters and Twitter ensure that industry users are always up to date.

www.siemens.com/industry/onlinesupport

Online Support App

Using the Online Support app, you can access over 300,000 documents covering all Siemens industrial products - anywhere, any time. Regardless of whether you need help implementing your project, fault-finding, expanding your system or are planning a new machine.

You have access to FAQs, manuals, certificates, characteristics curves, application examples, product notices (e.g. announcements of new products) and information on successor products in the event that a product is discontinued.

Just scan the product code printed on the product directly using the camera of your mobile device to immediately see all technical information available on this product at a glance. The graphical CAx information (3D model, circuit diagrams or EPLAN macros) is also displayed. You can forward this information to your workplace using the e-mail function.

The search function retrieves product information and articles and supports you with a personalized suggestion list. You can find your favorite pages – articles you need frequently – under "mySupport". You also receive selected news on new functions, important articles or events in the News section.

Scan the QR code for information on our Online Support app.

The app is available free of charge from the Apple App Store (iOS) or from Google Play (Android).

www.siemens.com/industry/onlinesupportapp

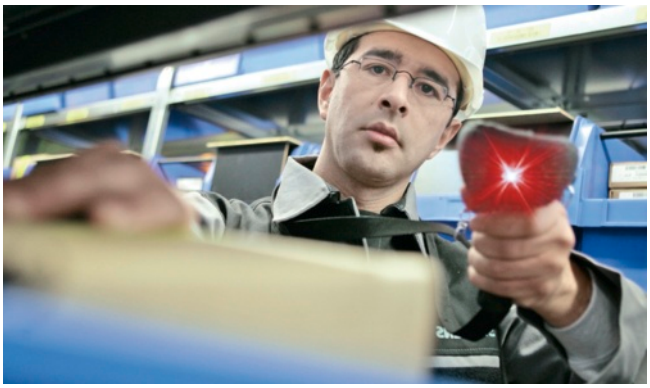
Technical Support

The ability to quickly analyze system and error messages and take appropriate action are key factors in ensuring that plants run safely and efficiently. Questions can arise at any time and in any industry, whether it's an individual product or a complete automation solution. Siemens technical support offers individual technical assistance in matters related to functionality, how to operate, applications, and fault clearance in industrial products and systems – at any time and globally, over the phone, by e-mail, or via remote access. Experienced experts from Siemens answer incoming questions promptly. Depending on the requirements, they first consult specialists in the areas of development, on-site services, and sales. Technical support is also available for discontinued products that are no longer available. Using the support request number, any inquiry can be clearly identified and systematically tracked.

Industry Services for the entire life cycle

Spare Parts

Drive and automation systems must be available at all times. Even a single missing spare part can bring the entire plant to a standstill – and result in substantial financial losses for the operator. The spare parts services from Siemens protects against such losses – with the aid of quickly available, original spare parts that ensure smooth interaction with all other system components. Spare parts are kept on hand for up to ten years; defective parts can be returned. For many products and solutions, individual spare parts packages ensure a preventive stock of spare parts on-site. The spare parts services is available around the world and around the clock. Optimum supply chain logistics ensure that replacement components reach their destination as quickly as possible. Siemens' logistics experts take care of planning and management as well as procurement, transportation, customs handling, warehousing, and complete order management for spare parts.



Repair Services

Reliable electrical and electronic equipment is crucial for operating continuous processes. That is why it is essential that motors and converters always undergo highly specialized repair and maintenance. Siemens offers complete customer and repair services – on site and in repair centers – as well as technical emergency services worldwide. The repair services include all measures necessary to quickly restore the functionality of defective units. In addition, services such as spare parts logistics, spare parts storage and rapid manufacturing are available to plant operators in all verticals. With a global network of certified repair shops operated by Siemens as well as third parties, Siemens handles the maintenance and overhaul of motors, converters, and other devices as an authorized service partner.

Field Services

It's a top priority in all industries: the availability of plants and equipment. Siemens offers specialized maintenance services such as inspection and upkeep as well as rapid fault clearance in industrial plants – worldwide, continuously, and even with emergency services as needed. The services include startup as well as maintenance and fault clearance during operation. The startup service includes checking the installation, function tests, parameterization, integration tests for machines and plants, trial operation, final acceptance, and employee training. All services, including remote maintenance of drives, are also available as elements of customized service contracts.

Training

Increasingly, up-to-date knowledge is becoming a determining factor in success. One of the key resources of any company is well-trained staff that can make the right decision at the right moment and take full advantage of the potential. With SITRAIN – Training for Industry, Siemens offers comprehensive advanced training programs. The technical training courses convey expertise and practical knowledge directly from the manufacturer. SITRAIN covers Siemens' entire product and system portfolio in the field of automation and drives. Together with the customer, Siemens determines the company's individual training needs and then develops an advanced training program tailored to the desired requirements. Additional services guarantee that the knowledge of all Siemens partners and their employees is always up-to-date.

Technical Consulting & Engineering Support

The efficiency of plants and processes leads to sustainable economic success. Individual services from Siemens help save substantial time and money while also guaranteeing maximum safety. Technical consulting covers the selection of products and systems for efficient industrial plants. The services include planning, consulting, and conceptual design as well as product training, application support, and configuration verification – in all phases of a plant's lifecycle and in all questions related to product safety. Engineering support offers competent assistance throughout the entire project, from developing a precise structure for startup to product-specific preparation for implementation as well as support services in areas such as prototype development, testing and acceptance.

Energy & Environmental Services

Efficient energy use and resource conservation – these top sustainability concerns pay off – both for the environment and for companies. Siemens offers integrated solutions that unlock all technical and organizational potential for successful environmental management. Customized consulting services are aimed at sustainably lowering the cost of energy and environmental protection and thus increasing plant efficiency and availability. The experts provide support in the conceptual design and implementation of systematic solutions in energy and environmental management, enabling maximum energy efficiency and optimized water consumption throughout the entire company. Improved data transparency makes it possible to identify savings potential, reduce emissions, optimize production processes, and thereby noticeably cut costs.

Industry Services for the entire life cycle

Modernization & Optimization Services

High machine availability, expanded functionality and selective energy savings – in all industries, these are decisive factors for increasing productivity and lowering costs. Whether a company wants to modernize individual machines, optimize drive systems, or upgrade entire plants, Siemens' experts support the projects from planning to commissioning.

Expert consulting and project management with solution responsibility lead to security and make it possible to specifically identify savings potential in production. This secures investments over the long term and increases economic efficiency in operation.

Plant Maintenance & Condition Monitoring

Modern industrial plants are complex and highly automated. They must operate efficiently in order to ensure the company's competitive strength. In addition, the steadily increasing networking of machines and plants require consistent security concepts. Maintenance and status monitoring as well as the implementation of integrated security concepts by Siemens' experts support optimum plant use and avoid downtime. The services include maintenance management as well as consulting on maintenance concepts, including the complete handling and execution of the necessary measures. Complete solutions also cover remote services, including analysis, remote diagnosis, and remote monitoring. These are based on the Siemens Remote Services platform with certified IT security.

Service Contracts

Making maintenance costs calculable, reducing interfaces, speeding up response times, and unburdening the company's resources – the reduced downtimes that these measures achieve increase the productivity of a plant. Service contracts from Siemens make maintenance and repairs more cost-effective and efficient. The service packages include local and remote maintenance for a system or product group in automation and drive technology. Whether you need extended service periods, defined response times, or special maintenance intervals, the services are compiled individually and according to need. They can be adjusted flexibly at any time and used independently of each other. The expertise of Siemens' specialists and the capabilities of remote maintenance thus ensure reliable and fast maintenance processes throughout a plant's entire lifecycle.

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
- Rental floating license
- Trial license
- Demo license
- Demo floating 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 per license.

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 instance, 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 period of time (the operating hours do not have to be consecutive).
One license is required for each installation of the software.

Rental floating license

The rental floating license corresponds to the rental license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

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.

Demo license

The demo license support the "sporadic use" of engineering software in a non-productive context, for example, use for testing and evaluation purposes. It can be transferred to another license. After the installation of the license key, the software can be operated for a specific period of time, whereby usage can be interrupted as often as required.

One license is required per installation of the software.

Demo floating license

The demo floating license corresponds to the demo license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Certificate of license (CoL)

The 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.

Overview

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).

Software Update Service (SUS)

As part of the SUS contract, all software updates for the respective product are made available to you free of charge for a period of one year from the invoice date. The contract will automatically be extended for one year if it is not canceled three months before it expires.

The possession of the current version of the respective software is a basic condition for entering into an SUS contract.

You can download explanations concerning license conditions from www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

Index

Notes

Appendix

Notes

Notes

Conditions of sale and delivery

1. General Provisions

By using this catalog you can acquire hardware and software products described therein from Siemens AG subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Please note that the scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

1.1 For customers with a seat or registered office in Germany

For customers with a seat or registered office in Germany, the following applies subordinate to the T&C:

- the "General Terms of Payment"[1)] and,
- for software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or Registered Office in Germany"[1)] and,
- for other supplies and services, the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"[1)].

1.2 For customers with a seat or registered office outside Germany

For customers with a seat or registered office outside Germany, the following applies subordinate to the T&C:

- the "General Terms of Payment"[1)] and,
- 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"[1)] and
- for other supplies and/or services, the "General Conditions for Supplies of Siemens Industry for Customers with a Seat or Registered Office outside of Germany"[1)].

2. Prices

The prices are in € (Euro) ex point of delivery, exclusive of packaging.

The sales tax (value added tax) is not included in the prices. It shall be charged separately at the respective rate according to the applicable statutory legal regulations.

Prices are subject to change without prior notice. We will charget the prices valid at the time of delivery.

To compensate for variations in the price of raw materials (e.g. silver, copper, aluminum, lead, gold, dysprosium and neodym), surcharges are calculated on a daily basis using the so-called metal factor for products containing these raw materials. A surcharge for the respective raw material is calculated as a supplement to the price of a product if the basic official price of the raw material in question is exceeded.

The metal factor of a product indicates the basic official price (for those raw materials concerned) as of which the surcharges on the price of the product are applied, and with what method of calculation.

An exact explanation of the metal factor can be downloaded at:

www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

To calculate the surcharge (except in the cases of dysprosium and neodym), the official price from the day prior to that on which the order was received or the release order was effected is used.

To calculate the surcharge applicable to dysprosium and neodym ("rare earths"), the corresponding three-month basic average price in the quarter prior to that in which the order was received or the release order was effected is used with a one-month buffer (details on the calculation can be found in the explanation of the metal factor).

3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches apply only to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the individual pages of this catalog - especially with regard to data, dimensions and weights given - these are subject to change without prior notice.

4. Export regulations

We shall not be obligated to fulfill any agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes and/or other sanctions.

Export of goods listed in this catalog may be subject to licensing requirements. We will indicate in the delivery details whether licenses are required under German, European and US export lists. Goods labeled with "AL" not equal to "N" are subject to European or German export authorization when being exported out of the EU. Goods labeled with "ECCN" not equal to "N" are subject to US re-export authorization.

The export indications can be viewed in advance in the description of the respective goods on the Industry Mall, our online catalog system. Only the export labels "AL" and "ECCN" indicated on order confirmations, delivery notes and invoices are authoritative.

Even without a label, or with label "AL:N" or "ECCN:N", authorization may be required i .a. due to the final disposition and intended use of goods.

If you transfer goods (hardware and/or software and/or technology as well as corresponding documentation, regardless of the mode of provision) delivered by us or works and services (including all kinds of technical support) performed by us to a third party worldwide, you must comply with all applicable national and international (re-)export control regulations.

If required for the purpose of conducting export control checks, you (upon request by us) shall promptly provide us with all information pertaining to the particular end customer, final disposition and intended use of goods delivered by us respectively works and services provided by us, as well as to any export control restrictions existing in this relation.

The products listed in this catalog may be subject to European/German and/or US export regulations. Any export requiring approval is therefore subject to authorization by the relevant authorities.

Errors excepted and subject to change without prior notice.

1) The text of the Terms and Conditions of Siemens AG can be downloaded at www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

Catalogs

Industry Automation, Drive Technologies and Low-Voltage Power Distribution

Further information can be obtained from our branch offices listed at www.siemens.com/automation/partner

System Solutions for Industry Interactive Catalog on DVD	*Catalog*
Products for Automation and Drives, Low-Voltage Power Distribution and Electrical Installation Technology	**CA 01**

Building Control	
GAMMA Building Control	ET G1

Drive Systems	
SINAMICS G130 Drive Converter Chassis Units SINAMICS G150 Drive Converter Cabinet Units	D 11
SINAMICS GM150, SINAMICS SM150 Medium-Voltage Converters	D 12
SINAMICS PERFECT HARMONY GH180 Medium-Voltage Air-Cooled Drives Germany Edition	D 15.1
SINAMICS G180 Converters – Compact Units, Cabinet Systems, Cabinet Units Air-Cooled and Liquid-Cooled	D 18.1
SINAMICS S120 Chassis Format Units and Cabinet Modules SINAMICS S150 Converter Cabinet Units	D 21.3
SINAMICS DCM Converter Units	D 23.1
SINAMICS DCM Cabinet	D 23.2
SINAMICS and Motors for Single-Axis Drives	D 31
Three-Phase Induction Motors SIMOTICS HV, SIMOTICS TN • Series H-compact • Series 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
Digital: 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
Note: Additional catalogs on SIMODRIVE or SINAMICS drive systems and SIMOTICS motors with SINUMERIK and SIMOTION can be found under Motion Control	
Low-Voltage Three-Phase-Motors	
SIMOTICS Low-Voltage Motors	D 81.1
MOTOX Geared Motors	D 87.1
SIMOGEAR Geared Motors	MD 50.1
SIMOGEAR Gearboxes with adapter	MD 50.11
Mechanical Driving Machines	
FLENDER Standard Couplings	MD 10.1
FLENDER High Performance Couplings	MD 10.2
FLENDER SIG Standard industrial gear unit	MD 30.1
FLENDER SIP Standard industrial planetary gear units	MD 31.1

Process Instrumentation and Analytics	
Field Instruments for Process Automation	FI 01
Digital: SIPART Controllers and Software	*MP 31*
Products for Weighing Technology	WT 10
Digital: Process Analytical Instruments	*PA 01*
Digital: Process Analytics, Components for the System Integration	*PA 11*

Digital: These catalogs are only available as a PDF and/or as an e-book.

Low-Voltage Power Distribution and Electrical Installation Technology	*Catalog*
SENTRON · SIVACON · ALPHA Protection, Switching, Measuring and Monitoring Devices, Switchboards and Distribution Systems	LV 10
Standards-Compliant Components for Photovoltaic Plants	LV 11
3WT Air Circuit Breakers up to 4000 A	LV 35
Digital: 3VT Molded Case Circuit Breakers up to 1600 A	*LV 36*
Digital: SIVACON System Cubicles, System Lighting and System Air-Conditioning	*LV 50*
Digital: ALPHA Distribution Systems	*LV 51*
ALPHA FIX Terminal Blocks	LV 52
SIVACON S4 Power Distribution Boards	LV 56
Digital: SIVACON 8PS Busbar Trunking Systems	*LV 70*
Digital: DELTA Switches and Socket Outlets	*ET D1*

Motion Control	
SINUMERIK & SIMODRIVE Automation Systems for Machine Tools	NC 60
SINUMERIK & SINAMICS Equipment for Machine Tools	NC 61
SINUMERIK 840D sl Type 1B Equipment for Machine Tools	NC 62
SINUMERIK 808 Equipment for Machine Tools	NC 81.1
SINUMERIK 828 Equipment for Machine Tools	NC 82
SIMOTION, SINAMICS S120 & SIMOTICS Equipment for Production Machines	PM 21
Drive and Control Components for Cranes	CR 1

Power Supply	
Power supply SITOP	KT 10.1

Safety Integrated	
Safety Technology for Factory Automation	SI 10

SIMATIC HMI/PC-based Automation	
Human Machine Interface Systems/ PC-based Automation	ST 80/ ST PC

SIMATIC Ident	
Industrial Identification Systems	ID 10

SIMATIC Industrial Automation Systems	
Products for Totally Integrated Automation	ST 70
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Add-ons for the SIMATIC PCS 7 Process Control System	ST PCS 7 AO

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Industrial Communication	IK PI

SIRIUS Industrial Controls	
SIRIUS Industrial Controls	IC 10

Information and Download Center

Digital versions of the catalogs are available on the Internet at:
www.siemens.com/industry/infocenter
There you'll find additional catalogs in other languages.

Please note the section "Downloading catalogs" on page "Online services" in the appendix of this catalog.

Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, solutions, machines, equipment and/or networks. They are important components in a holistic industrial security concept. With this in mind, Siemens' products and solutions undergo continuous development. Siemens recommends strongly that you regularly check for product updates.

For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. For more information about industrial security, visit
http://www.siemens.com/industrialsecurity.

To stay informed about product updates as they occur, sign up for a product-specific newsletter. For more information, visit
http://support.automation.siemens.com.

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