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 with a SIMATIC or non-Siemens PROFINET IO controller
- OPC UA Server and Client as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems with the functions:
  - OPC UA Data Access
  - OPC UA Security
  - OPC UA Methods Call
  - Support of OPC UA Companion specifications
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

SIPLUS extreme products are based on SIMATIC 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 memory 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 with a SIMATIC or non-Siemens PROFINET IO controller
- OPC UA Server and Client as runtime option for the easy connection of SIPLUS S7-1500 to third-party devices/systems with the functions:
  - OPC UA Data Access
  - OPC UA Security
  - OPC UA Methods Call
  - Support of OPC UA Companion specifications.
- Central and distributed isochronous mode
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages

Note:

SIMATIC Memory Card required for operation of the CPU.

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

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 with a SIMATIC or non-Siemens PROFINET IO controller
- PROFIBUS DP master interface
- Isochronous mode on PROFIBUS and PROFINET

Note:

SIMATIC Memory Card required for operation of the CPU.

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

Overview SIPLUS 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 with 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.

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

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Overview SIPLUS CPU 1518-4 PN/DP MFP

- 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
- C/C++ functions can be called and executed in the CPU runtime.
- In parallel to the CPU runtime, there is an additional C/C++ Runtime, in which call-independent, i.e. stand-alone, C/C++ applications can be executed.
- 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 with a SIMATIC or non-Siemens PROFINET IO controller
- Two additional PROFINET interfaces with separate IP address for network separation:
  The PROFINET interface X2 can be used for connecting additional PROFINET IO RT devices or for fast communication as an I-device. The PROFINET interface X3 facilitates data transfer at a speed of 1 Gbps.
- PROFIBUS DP master interface
- OPC UA server (Data Access) as runtime option for the easy connection of SIMATIC S7-1500 to third-party devices/systems
- Isochronous mode on PROFIBUS and PROFINET
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes, support for external encoders, gearing between axes, output cams/cam tracks and probes
- Integrated web server for diagnostics with the option of creating user-defined web pages

Multi-functional platform

With the multi-functional platform (MFP), more functionality can be accommodated in a module. The computing power of the CPU 1518-4 PN/DP MFP allows the merging of previously separate applications on a common platform while continuing to meet the high S7-1500 demands with regard to maintenance and ruggedness.
In this way, in addition to the control function, typical PC applications can also be processed on the multifunctional platform, e.g. tasks which

- require high-level language programming,
- are developed based on models, or
- have to be solved via databases.

Thus, in addition to the option of running C/C++ code in the standard STEP 7 program, the CPU 1518-4 PN/DP MFP multi-functional platform provides an additional second independent runtime environment in order to execute C/C++ applications in parallel to the STEP 7 program if required.
Controller-independent applications, e.g. protocol converter, database application and others can be created in C/C++. This simplifies the creation or reuse of customer-specific high-level language applications.
The CPU 1518-4 PN/DP MFP has the quantity structure and functionality of a CPU 1518-4 PN/DP with regard to the control unit. In addition to the user program created with STEP 7 in the TIA Portal, C/C++ functions formulated via the SIMATIC ODK 1500S can be integrated into the standard user program.
By using SIMATIC ODK 1500S (ODK - Open Development Kit), higher-level programming language mechanisms (e.g. object orientation) can also be utilized.
Furthermore, with the SIMATIC Target 1500S™ engineering package for Simulink®, it is also possible to integrate complex Simulink models to take advantage of the model-based development using MATLAB and Simulink®.

Note:

SIMATIC Memory Card required for operation of the CPU.

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

Ordering data

	Article No.
SIPLUS CPU 1511-1 PN	
(Extended temperature range and exposure to environmental substances)	
150 KB work memory for program, 1 MB for data, PROFINET IRT interface with 2-port switch; SIMATIC Memory Card required	
Temperature range -40 ... +60 °C	**6AG1511-1AK02-2AB0**
Temperature range -40 ... +70 °C	**6AG1511-1AK02-7AB0**
SIPLUS CPU 1513-1 PN	
(Extended temperature range and exposure to environmental substances)	
300 KB work memory for program, 1.5 MB for data, PROFINET IRT interface with 2-port switch; SIMATIC Memory Card required	
Temperature range -40 ... +60 °C	**6AG1513-1AL02-2AB0**
Temperature range -40 ... +70 °C	**6AG1513-1AL02-7AB0**
SIPLUS CPU 1516-3 PN/DP	
(Extended temperature range and exposure to environmental substances)	
1 MB work memory for program, 5 MB for data, PROFINET IRT interface with 2-port switch, PROFINET RT interface, PROFIBUS interface; SIMATIC Memory Card required	
Temperature range -40 ... +60 °C	**6AG1516-3AN02-2AB0**
Temperature range -40 ... +70 °C	**6AG1516-3AN02-7AB0**
SIPLUS CPU 1518-4 PN/DP	**6AG1518-4AP00-4AB0**
(Exposure to environmental substances)	
3 MB work memory for program, 10 MB for data, PROFINET IRT interface with 2-port switch, PROFINET RT interface, Ethernet interface, PROFIBUS interface; SIMATIC Memory Card required	
SIPLUS CPU 1518-4 PN/DP MFP	**6AG1518-4AX00-4AC0**
(Exposure to environmental substances)	
4 MB work memory for program, 20 MB for data, 50 MB for CPU function library in the CPU Runtime, 500 MB for C/C++ runtime application, PROFINET IRT interface with 2-port switch, PROFINET RT interface, Ethernet interface, PROFIBUS interface; C/C++ runtime and OPC UA Runtime license included; SIMATIC Memory Card required	
Accessories	
System power supply	
(Extended temperature range and exposure to environmental substances)	
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 current supply	
(Extended temperature range and exposure to environmental substances)	
24 V DC/3 A	**6AG1332-4BA00-7AA0**
24 V DC/8 A	**6AG1333-4BA00-7AA0**
Display	
(Extended temperature range and exposure to environmental substances)	
For SIPLUS CPU 1511-1 PN and CPU 1513-1 PN; spare part	**6AG1591-1AB00-2AA0**
For SIPLUS CPU 1516-3 PN/DP, 6AG1516-3AN02-7AB0; spare part	**6AG1591-1BB00-2AA0**
For SIPLUS CPU 1518-4 PN/DP and SIPLUS CPU 1518-4 PN/DP; spare part	**6AG1591-1BA02-2AA0**
Other accessories	See SIMATIC S7-1500, standard CPUs, page 4/9

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Technical specifications

Article number	**6AG1511-1AK02-2AB0**	**6AG1511-1AK02-7AB0**	**6AG1513-1AL02-2AB0**	**6AG1513-1AL02-7AB0**
Based on	**6ES7511-1AK02-0AB0**	**6ES7511-1AK02-0AB0**	**6ES7513-1AL02-0AB0**	**6ES7513-1AL02-0AB0**
	SIPLUS S7-1500 CPU 1511-1 PN	SIPLUS S7-1500 CPU 1511-1 PN	SIPLUS S7-1500 CPU 1513-1 PN	SIPLUS S7-1500 CPU 1513-1 PN
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	70 °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	70 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• 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	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
• Ambient air temperature-barometric pressure-altitude	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *

Technical specifications

Article number	**6AG1511-1AK02-2AB0**	**6AG1511-1AK02-7AB0**	**6AG1513-1AL02-2AB0**	**6AG1513-1AL02-7AB0**
Based on	**6ES7511-1AK02-0AB0**	**6ES7511-1AK02-0AB0**	**6ES7513-1AL02-0AB0**	**6ES7513-1AL02-0AB0**
	SIPLUS S7-1500 CPU 1511-1 PN	SIPLUS S7-1500 CPU 1511-1 PN	SIPLUS S7-1500 CPU 1513-1 PN	SIPLUS S7-1500 CPU 1513-1 PN
Usage in industrial process technology				
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Article number	**6AG1516-3AN02-2AB0**	**6AG1516-3AN02-7AB0**	**6AG1518-4AP00-4AB0**	**6AG1518-4AX00-4AC0**
Based on	**6ES7516-3AN02-0AB0**	**6ES7516-3AN02-0AB0**	**6ES7518-4AP00-0AB0**	**6ES7518-4AX00-1AC0**
	SIPLUS S7-1500 CPU 1516-3 PN/DP	SIPLUS S7-1500 CPU 1516-3 PN/DP	SIPLUS S7-1500 CPU 1518-4 PN/DP	SIPLUS S7-1500 CPU 1518-4 PN/DP MFP
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	0 °C; = Tmin (incl. condensation/frost)	0 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C	70 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C	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	-40 °C; = Tmin	0 °C; = Tmin	0 °C; = Tmin
• vertical installation, max.	40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; = Tmax; 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
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; incl. condensation/frost permitted (no commissioning under condensation conditions)

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Technical specifications

Article number	6AG1516-3AN02-2AB0	6AG1516-3AN02-7AB0	6AG1518-4AP00-4AB0	6AG1518-4AX00-4AC0
Based on	6ES7516-3AN02-0AB0	6ES7516-3AN02-0AB0	6ES7518-4AP00-0AB0	6ES7518-4AX00-1AC0
	SIPLUS S7-1500 CPU 1516-3 PN/DP	SIPLUS S7-1500 CPU 1516-3 PN/DP	SIPLUS S7-1500 CPU 1518-4 PN/DP	SIPLUS S7-1500 CPU 1518-4 PN/DP MFP
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology				
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A
• Protection level: Read/write protection	Yes	Yes	Yes	Yes
• Protection level: Complete protection	Yes	Yes	Yes	Yes

Overview SIPLUS CPU 1511F-1 PN

- Entry-level CPU in the SIPLUS S7-1500F Controller product range
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849.
- Suitable for standard and fail-safe applications with medium requirements for program scope and processing speed
- 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
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as an intelligent PROFINET device with a SIMATIC or non-Siemens PROFINET IO controller
- Isochronous mode

Note:

SIMATIC Memory Card required for operation of the CPU.

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

Overview SIPLUS CPU 1513F-1 PN

- The CPU for standard and fail-safe applications with medium/high requirements for program/data storage in the SIPLUS 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
- Supports PROFIsafe in centralized and distributed configuration
- 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 with a SIMATIC or non-Siemens PROFINET IO controller
- Isochronous mode

Note:

SIMATIC Memory Card required for operation of the CPU.

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

SIPLUS fail-safe CPUs

Overview SIPLUS CPU 1515F-2 PN

- The CPU for applications with medium to high requirements for program/data storage in the S7-1500 Controller product range
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849.
- Medium to 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 with a SIMATIC or non-Siemens PROFINET IO 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

Note:

SIMATIC Memory Card required for operation of the CPU.

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

Overview SIPLUS CPU 1516F-3 PN/DP

- The CPU with a large program and data memory in the SIPLUS S7-1500 Controller product range for fail-safe applications with high requirements regarding program scope and networking.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849.
- 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 with 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

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

Overview SIPLUS CPU 1518F-4 PN/DP

- The CPU with a very large program and data memory in the SIPLUS S7-1500 Controller product range for fail-safe applications with highest requirements regarding program scope, performance and networking.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849.
- 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 with 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.

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

SIPLUS fail-safe CPUs

Ordering data	Article No.
SIPLUS CPU 1511F-1 PN	
(Extended temperature range and exposure to environmental substances)	
Fail-safe central processing unit with work memory 225 KB for program, 1 MB for data, 1st interface: PROFINET IRT with 2-port switch; SIMATIC Memory Card required	
Temperature range -25 ... +60 °C	**6AG1511-1FK02-2AB0**
SIPLUS CPU 1513F-1 PN	**6AG1513-1FL02-2AB0**
(Extended temperature range and exposure to environmental substances)	
Fail-safe CPU, 450 KB work memory for program, 1.5 MB for data, PROFINET IRT interface with 2-port switch; SIMATIC Memory Card required	
SIPLUS CPU 1515F-2 PN	**6AG1515-2FM02-2AB0**
(Extended temperature range and exposure to environmental substances)	
Fail-safe CPU, 750 KB work memory for program, 3 MB for data, PROFINET IRT interface with 2-port switch; PROFINET RT interface; SIMATIC Memory Card required	
SIPLUS CPU 1516F-3 PN/DP	**6AG1516-3FN02-2AB0**
(Extended temperature range and exposure to environmental substances)	
Fail-safe CPU, 1.5 MB work memory for program, 5 MB for data, PROFINET IRT interface with 2-port switch, PROFINET RT interface, PROFIBUS interface; SIMATIC Memory Card required	
Temperature range -40 ... +60 °C	
CPU 1518F-4 PN/DP	**6AG1518-4FP00-4AB0**
(Exposure to environmental substances)	
Fail-safe CPU, 6 MB work memory for program, 20 MB for data, PROFINET IRT interface with 2-port switch, PROFINET RT interface, Ethernet interface, PROFIBUS interface; SIMATIC Memory Card required	

Accessories	Article No.
System power supply	
(Extended temperature range and exposure to environmental substances)	
For supplying the backplane bus of the S7-1500 Controller	
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 current supply	
(Extended temperature range and exposure to environmental substances)	
24 V DC/3 A	**6AG1332-4BA00-7AA0**
24 V DC/8 A	**6AG1333-4BA00-7AA0**
Display	
(Extended temperature range and exposure to environmental substances)	
For SIPLUS CPU 1511-1 PN; spare part	**6AG1591-1AA01-2AA0**
For SIPLUS CPU 1513F-1 PN; spare part	**6AG1591-1AB00-2AA0**
For SIPLUS CPU 1515F-2 PN, CPU 1516F-3 PN/DP and CPU 1518-4F PN/DP; spare part	**6AG1591-1BB00-2AA0**
For SIPLUS CPU 1518-4F PN/DP; spare part	**6AG1591-1BA02-2AA0**
Other accessories	See SIMATIC S7-1500, fail-safe CPUs, page 4/39

Technical specifications

Article number	6AG1511-1FK02-2AB0	6AG1513-1FL02-2AB0	6AG1515-2FM02-2AB0	6AG1516-3FN02-2AB0	6AG1518-4FP00-4AB0
Based on	6ES7511-1FK02-0AB0	6ES7513-1FL02-0AB0	6ES7515-2FM02-0AB0	6ES7516-3FN02-0AB0	6ES7518-4FP00-0AB0
	SIPLUS S7-1500 CPU 1511F-1 PN	SIPLUS S7-1500 CPU 1513F-1 PN	SIPLUS S7-1500 CPU 1515F-2 PN	SIPLUS S7-1500 CPU 1516F-3 PN/DP	SIPLUS S7-1500 CPU 1518F-4 PN/DP
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-25 °C; = Tmin (incl. condensation/frost)	-25 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	0 °C
• horizontal installation, max.	60 °C; = Tmax; display: 5 0 °C, the display is switched off at an operating temperature of typically 50 °C	60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C	60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C	60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-25 °C; = Tmin (incl. condensation/frost)	-25 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin	-40 °C; = Tmin	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	40 °C; = Tmax; display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off	40 °C; = Tmax; 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
Altitude during operation relating to sea level					
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m
• Ambient air temperature-barometric pressure-altitude	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260
Relative humidity					
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance					
Coolants and lubricants					
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems					
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea					
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *

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Technical specifications

Article number	6AG1511-1FK02-2AB0	6AG1513-1FL02-2AB0	6AG1515-2FM02-2AB0	6AG1516-3FN02-2AB0	6AG1518-4FP00-4AB0
Based on	**6ES7511-1FK02-0AB0**	**6ES7513-1FL02-0AB0**	**6ES7515-2FM02-0AB0**	**6ES7516-3FN02-0AB0**	**6ES7518-4FP00-0AB0**
	SIPLUS S7-1500 CPU 1511F-1 PN	SIPLUS S7-1500 CPU 1513F-1 PN	SIPLUS S7-1500 CPU 1515F-2 PN	SIPLUS S7-1500 CPU 1516F-3 PN/DP	SIPLUS S7-1500 CPU 1518F-4 PN/DP
Usage in industrial process technology					
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark					
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating					
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Overview SIPLUS CPU 1515R-2 PN

- The CPU for applications with medium/high requirements for program scope, networking and processing speed, and with increased requirements for availability.
- High processing speed for binary and floating-point arithmetic
- Used as central PLC with distributed I/O.
- PROFINET IO RT interface with 2-port switch.
- Additional PROFINET interface with separate IP address.
- PROFINET IO controller for operating distributed I/O on PROFINET.

Note:

SIMATIC Memory Card required for operation of the CPU.

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

Overview SIPLUS CPU 1517H-3 PN

- The CPU for applications with high requirements for availability, very high requirements for program scope and networking, and very high requirements for processing speed.
- High processing speed for binary and floating-point arithmetic
- Used as central PLC with distributed I/O.
- PROFINET IO RT interface with 2-port switch.
- Additional PROFINET interface with separate IP address.
- PROFINET IO controller for operating distributed I/O on PROFINET.

Note:

SIMATIC Memory Card required for operation of the CPU.

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

Overview SIPLUS CPU 1518HF-4 PN

- The CPU for applications with high availability requirements, also in connection with functional safety requirements.
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849.
- A very large program data memory enables the realization of extensive applications.
- High processing speed for binary and floating-point arithmetic
- Used as central PLC with distributed I/O.
- Supports PROFIsafe in distributed configurations.
- PROFINET IO RT interface with 2-port switch.
- Two additional PROFINET interfaces with separate IP addresses.
- PROFINET IO controller for operating distributed I/O on PROFINET.

Note:

SIMATIC Memory Card required for operation of the CPU.

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

SIPLUS redundant CPUs

Ordering data	Article No.
SIPLUS CPU 1515R-2 PN (Extended temperature range and exposure to environmental substances) SIPLUS S7-1500R CPU, 500 KB work memory for program, 3 MB for data, PROFINET RT interface with 2-port switch, PROFINET interface; SIMATIC Memory Card required	**6AG1515-2RM00-7AB0**
SIPLUS CPU 1517H-3 PN (Extended temperature range and exposure to environmental substances) SIPLUS S7-1500H CPU, 2 MB work memory for program, 8 MB for data, 1st PROFINET RT interface with 2-port switch, 2nd PROFINET RT interface, 3rd interface synchronization, command times for bit operations 4 ns; SIMATIC Memory Card required	**6AG1517-3HP00-4AB0**
SIPLUS S7-1500 CPU 1517H System Bundle (Extended temperature range and exposure to environmental substances) Comprising 2 SIPLUS CPU 1517H-3 PN, 4 SIPLUS synchronization modules up to 10 m, 2 FOC synchronization cables (1 m); without memory card	**6AG1500-0HP00-4AB0**
SIPLUS CPU 1518HF-4 PN With conformal coating CPU with 9 MB work memory for program and 60 MB work memory for data,1st interface: PROFINET RT with 2-port switch, 2nd interface: PROFINET, 3rd interface: PROFINET, 4th/5th interface: H-SYNC; SIMATIC Memory Card required	**6AG1518-4JP00-4AB0**

	Article No.
Accessories	
Synchronization modules (Extended temperature range and exposure to environmental substances)	
• For patch cable FOC up to 10 m	**6AG1960-1CB00-4AA5**
• For routing cable FOC up to 10 km	**6AG1960-1FB00-4AA5**
System power supply (Extended temperature range and exposure to environmental substances) For supplying the backplane bus of the S7-1500 Controller	
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 current supply (Extended temperature range and exposure to environmental substances)	
24 V DC/3 A	**6AG1332-4BA00-7AA0**
24 V DC/8 A	**6AG1333-4BA00-7AA0**
Display (Extended temperature range and exposure to environmental substances) For SIPLUS CPU 1515R-2 PN/DP and CPU 1517H-3 PN; spare part	**6AG1591-1BA02-2AA0**
Other accessories	See SIMATIC S7-1500, CPU 1515R-2 PN, page 4/60

Technical specifications

Article number	**6AG1515-2RM00-7AB0**	**6AG1517-3HP00-4AB0**	**6AG1518-4JP00-4AB0**
Based on	**6ES7515-2RM00-0AB0**	**6ES7517-3HP00-0AB0**	**6ES7518-4JP00-0AB0**
	SIPLUS S7-1500 CPU 1515R-2 PN	SIPLUS S7-1500 CPU 1517H-3 PN	SIPLUS S7-1518HF-4 PN
Ambient conditions			
Ambient temperature during operation			
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -20 °C	0 °C; = Tmin	0 °C
• horizontal installation, max.	70 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off	60 °C; = Tmax; display: 50 °C, the display is switched off at an operating temperature of typically 50 °C	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
• vertical installation, min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -20 °C	0 °C; = Tmin	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	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual	5 000 m	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
• Ambient air temperature-barometric pressure-altitude	Restrictions for installation altitudes > 2 000 m, see entry ID: 109763260	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *

Technical specifications

Article number	**6AG1515-2RM00-7AB0**	**6AG1517-3HP00-4AB0**	**6AG1518-4JP00-4AB0**
Based on	**6ES7515-2RM00-0AB0**	**6ES7517-3HP00-0AB0**	**6ES7518-4JP00-0AB0**
	SIPLUS S7-1500 CPU 1515R-2 PN	SIPLUS S7-1500 CPU 1517H-3 PN	SIPLUS S7-1500 CPU 1518HF-4 PN
Usage in industrial process technology			
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)		Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)		Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

SIPLUS SM 521 digital input modules

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 SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

Ordering data	Article No.
SIPLUS SM 521 digital input modules	
(Extended temperature range and exposure to environmental substances)	
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**
16 inputs, 48 ... 125 V UC, input delay 0.05 ... 20 ms, parameterizable diagnostics and hardware interrupts	**6AG1521-7EH00-7AB0**
Accessories	See SIMATIC S7-1500 SM 521 digital input modules, page 4/91

Technical specifications

Article number	**6AG1521-1BH00-7AB0**	**6AG1521-1BL00-7AB0**	**6AG1521-1BH50-7AA0**	**6AG1521-1FH00-7AA0**	**6AG1521-7EH00-7AB0**
Based on	**6ES7521-1BH00-0AB0**	**6ES7521-1BL00-0AB0**	**6ES7521-1BH50-0AA0**	**6ES7521-1FH00-0AA0**	**6ES7521-7EH00-0AB0**
	SIPLUS S7-1500 DI 16X24VDC HF	SIPLUS S7-1500 DI 32X24VDC HF	SIPLUS S7-1500 DI 16X24VDC SRC BA	SIPLUS S7-1500 DI 16X230VAC BA	SIPLUS S7-1500 DI 48VUC/125VDC HF
Ambient conditions					
Ambient temperature during operation					
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• 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	70 °C; = Tmax; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. 4 inputs (no adjacent points)
• 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	
Altitude during operation relating to sea level					
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)

Technical specifications

Article number	**6AG1521-1BH00-7AB0**	**6AG1521-1BL00-7AB0**	**6AG1521-1BH50-7AA0**	**6AG1521-1FH00-7AA0**	**6AG1521-7EH00-7AB0**
Based on	**6ES7521-1BH00-0AB0**	**6ES7521-1BL00-0AB0**	**6ES7521-1BH50-0AA0**	**6ES7521-1FH00-0AA0**	**6ES7521-7EH00-0AB0**
	SIPLUS S7-1500 DI 16X24VDC HF	SIPLUS S7-1500 DI 32X24VDC HF	SIPLUS S7-1500 DI 16X24VDC SRC BA	SIPLUS S7-1500 DI 16X230VAC BA	SIPLUS S7-1500 DI 48VUC/125VDC HF
Relative humidity					
• With condensation, tested in accordance with IEC 60068-2-38, max.	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)	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation
Resistance					
Coolants and lubricants					
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems					
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea					
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *

Technical specifications

Article number	**6AG1521-1BH00-7AB0**	**6AG1521-1BL00-7AB0**	**6AG1521-1BH50-7AA0**	**6AG1521-1FH00-7AA0**	**6AG1521-7EH00-7AB0**
Based on	**6ES7521-1BH00-0AB0**	**6ES7521-1BL00-0AB0**	**6ES7521-1BH50-0AA0**	**6ES7521-1FH00-0AA0**	**6ES7521-7EH00-0AB0**
	SIPLUS S7-1500 DI 16X24VDC HF	SIPLUS S7-1500 DI 32X24VDC HF	SIPLUS S7-1500 DI 16X24VDC SRC BA	SIPLUS S7-1500 DI 16X230VAC BA	SIPLUS S7-1500 DI 48VUC/125VDC HF
Usage in industrial process technology					
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark					
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating					
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

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

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information has been added.

Ordering data

Ordering data	Article No.
SIPLUS SM 522 digital output modules	
(Extended temperature range and exposure to environmental substances)	
8 outputs, 24 V DC; 2 A, isolated	**6AG1522-1BF00-7AB0**
16 outputs, 24 V DC; 0.5 A, isolated	**6AG1522-1BH01-7AB0**
32 outputs, 24 V DC; 0.5 A, isolated	**6AG1522-1BL01-7AB0**
8 relay outputs, 230 V AC, 5 A	**6AG1522-5HF00-2AB0**
16 relay outputs, 230 V AC, 2 A	**6AG1522-5HH00-7AB0**
8 outputs (triac), 230 V AC, 2 A	**6AG1522-5FF00-7AB0**
16 outputs (triac), 230 V AC, 1 A	**6AG1522-5FH00-7AB0**
16 outputs, 24 ... 48 V UC, 125 V DC, 0.5 A, isolated	**6AG1522-5EH00-7AB0**
Accessories	See SIMATIC S7-1500 SM 522 digital output modules, page 4/99

Technical specifications

Article number	**6AG1522-1BF00-7AB0**	**6AG1522-1BH01-7AB0**	**6AG1522-1BL01-7AB0**	**6AG1522-5EH00-7AB0**
Based on	**6ES7522-1BF00-0AB0**	**6ES7522-1BH01-0AB0**	**6ES7522-1BL01-0AB0**	**6ES7522-5EH00-0AB0**
	SIPLUS S7-1500 DQ 8X24VDC/2A HF	SIPLUS S7-1500 DQ 16X24VDC/0.5A HF	SIPLUS S7-1500 DQ 32X24VDC/0.5A HF	SIPLUS S7-1500 DQ 16x48VUC/125VDC ST
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)
• 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; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. aggregate current 2 A per group	70 °C; = Tmax; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. aggregate current 2 A per group	70 °C; = Tmax; > +60 °C max. 0.25 A per output
• vertical installation, min.	-40 °C; = Tmin			
• vertical installation, max.	40 °C; = Tmax			
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation

SIPLUS SM 522 digital output modules

Technical specifications

Article number	6AG1522-1BF00-7AB0	6AG1522-1BH01-7AB0	6AG1522-1BL01-7AB0	6AG1522-5EH00-7AB0
Based on	6ES7522-1BF00-0AB0	6ES7522-1BH01-0AB0	6ES7522-1BL01-0AB0	6ES7522-5EH00-0AB0
	SIPLUS S7-1500 DQ 8X24VDC/2A HF	SIPLUS S7-1500 DQ 16X24VDC/0.5A HF	SIPLUS S7-1500 DQ 32X24VDC/0.5A HF	SIPLUS S7-1500 DQ 16x48VUC/125VDC ST
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology				
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

Technical specifications

Article number	**6AG1522-5HH00-7AB0**	**6AG1522-5HF00-2AB0**	**6AG1522-5FF00-7AB0**	**6AG1522-5FH00-7AB0**
Based on	**6ES7522-5HH00-0AB0**	**6ES7522-5HF00-0AB0**	**6ES7522-5FF00-0AB0**	**6ES7522-5FH00-0AB0**
	SIPLUS S7-1500 16DQ 230VAC 2A RLY	SIPLUS S7-1500 DQ 8X230VAC/5A ST (RELAY)	SIPLUS S7-1500 DQ 8X230VAC/2A ST (TRIAC)	SIPLUS S7-1500 16DQ 230VAC 1A ST TRIAC
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-25 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• horizontal installation, max.	70 °C; = Tmax; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. 8 outputs (no adjacent points)	60 °C; = Tmax	70 °C; = Tmax; > +60 °C number of simultaneously controllable outputs max. 8x 0.25 A, max. total current 2 A	70 °C; = Tmax; see Derating BasedOn (e.g. manual), additionally Tmax > 60 °C max. 4 A aggregate current per module, max. 0.25 A per output
• vertical installation, min.	-40 °C; = Tmin; Startup @ -25 °C	-25 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin; Startup @ -25 °C
• vertical installation, max.	40 °C	40 °C; = Tmax	40 °C; = Tmax	60 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	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 in bedewed state), horizontal installation
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *

SIPLUS SM 522 digital output modules

Technical specifications

Article number	**6AG1522-5HH00-7AB0**	**6AG1522-5HF00-2AB0**	**6AG1522-5FF00-7AB0**	**6AG1522-5FH00-7AB0**
Based on	**6ES7522-5HH00-0AB0**	**6ES7522-5HF00-0AB0**	**6ES7522-5FF00-0AB0**	**6ES7522-5FH00-0AB0**
	SIPLUS S7-1500 16DQ 230VAC 2A RLY	SIPLUS S7-1500 DQ 8X230VAC/5A ST (RELAY)	SIPLUS S7-1500 DQ 8X230VAC/2A ST (TRIAC)	SIPLUS S7-1500 16DQ 230VAC 1A ST TRIAC
Usage in industrial process technology				
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

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 SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

	Article No.
SIPLUS SM 531 analog input modules	
(Extended temperature range and exposure to environmental substances)	
8 analog inputs, ±10 V, ±5 V, 1 ... 5 V or 0/4 ... 20 mA, ±20 mA, 16 bits + sign; incl. infeed element, shielding bracket, 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 ohms, 16 bits	**6AG1531-7KF00-7AB0**
8 analog inputs, ±10 V, ±5 V, 1 ... 5 V or 0/4 ... 20 mA, ±20 mA, 16 bits + sign; including infeed element, shielding bracket, shield terminal, labeling strips, U connector, printed front door	**6AG1531-7NF00-7AB0**
8 analog inputs, ±1 V, ±500 mV, ±250 mV, ±80 mV, ±50 mV, ±25 mV; thermocouples type B, E, J, K, N, R, S, T, TXK/TXK(L) according to GOST; resistance thermometers Cu 10, Cu 50, Cu 100, Ni 10, Ni 100, Ni 120, Ni 200, Ni 500, Ni 1000, LG-Ni 1000, Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000; resistors 0...150/300/600/6000 ohms, PTC; 16 bit; incl. infeed element, shielding bracket, shield terminal, labeling strips, U connector, printed front door	**6AG1531-7PF00-4AB0**
Analog input module, AI 16xU BA, 16-bit resolution, accuracy 0.5%, 16 channels in groups of 16, 4 V DC common mode voltage, diagnostics, hardware interrupts;	**6AG1531-7LH00-7AB0**
Analog input module, AI 16xI BA, 16-bit resolution, accuracy 0.5%, 16 channels in groups of 16, 4 V DC common mode voltage, diagnostics, hardware interrupts;	**6AG1531-7MH00-7AB0**
Accessories	See SIMATIC S7-1500 SM 531 analog input modules, page 4/122

Technical specifications

Article number	6AG1531-7NF10-7AB0	6AG1531-7KF00-7AB0	6AG1531-7NF00-7AB0	6AG1531-7PF00-4AB0	6AG1531-7LH00-7AB0	6AG1531-7MH00-7AB0
Based on	6ES7531-7NF10-0AB0	6ES7531-7KF00-0AB0	6ES7531-7NF00-0AB0	6ES7531-7PF00-0AB0	6ES7531-7LH00-0AB0	6ES7531-7MH00-0AB0
	SIPLUS S7-1500 AI 8XU/I HS	SIPLUS S7-1500 AI 8XU/I/RTD/TC ST	SIPLUS S7-1500 AI 8XU/I HF	SIPLUS S7-1500 AI 8XU/R/RTD/TC HF	SIPLUS S7-1500 AI 16xU BA	SIPLUS S7-1500 AI 16xI BA
Ambient conditions						
Ambient temperature during operation						
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/ frost)	-40 °C; = Tmin (incl. condensation/ frost)	-40 °C; = Tmin (incl. condensation/ frost)	0 °C; = Tmin (incl. condensation/ frost)	-40 °C; = Tmin (incl. condensation/ frost)	-40 °C; = Tmin (incl. condensation/ frost)
• horizontal installation, max.	70 °C; = Tmax	70 °C; = Tmax	70 °C; = Tmax	60 °C; = Tmax	70 °C; = Tmax	70 °C; = Tmax
• vertical installation, min.	-40 °C; = Tmin	-40 °C; = Tmin	-40 °C; = Tmin	0 °C; = Tmin	-40 °C; = Tmin (incl. condensation/ frost)	-40 °C; = Tmin (incl. condensation/ frost)
• vertical installation, max.	40 °C; = Tmax	40 °C; = Tmax	40 °C; = Tmax	40 °C; = Tmax	40 °C; = Tmax	40 °C; = Tmax
Altitude during operation relating to sea level						
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity						
• With condensation, tested in accordance with IEC 60068-2-38, max.	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 in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation
Resistance						
Coolants and lubricants						
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems						
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 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 according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	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

Article number	**6AG1531-7NF10-7AB0**	**6AG1531-7KF00-7AB0**	**6AG1531-7NF00-7AB0**	**6AG1531-7PF00-4AB0**	**6AG1531-7LH00-7AB0**	**6AG1531-7MH00-7AB0**
Based on	**6ES7531-7NF10-0AB0**	**6ES7531-7KF00-0AB0**	**6ES7531-7NF00-0AB0**	**6ES7531-7PF00-0AB0**	**6ES7531-7LH00-0AB0**	**6ES7531-7MH00-0AB0**
	SIPLUS S7-1500 AI 8XU/I HS	SIPLUS S7-1500 AI 8XU/I/RTD/TC ST	SIPLUS S7-1500 AI 8XU/I HF	SIPLUS S7-1500 AI 8XU/R/RTD/TC HF	SIPLUS S7-1500 AI 16xU BA	SIPLUS S7-1500 AI 16xI BA
Use on ships/at sea						
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology						
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark						
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating						
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

SIPLUS SM 532 analog output modules

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 SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

	Article No.
SIPLUS SM 532 analog output modules	
(Extended temperature range and exposure to environmental substances)	
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, shielding bracket, shield terminal, labeling strips, U connector, printed front door	**6AG1532-5HF00-7AB0**
Accessories	See SIMATIC S7-1500 SM 532 analog output modules, page 4/133

Technical specifications

Article number	**6AG1532-5HD00-7AB0**	**6AG1532-5HF00-7AB0**
Based on	**6ES7532-5HD00-0AB0**	**6ES7532-5HF00-0AB0**
	SIPLUS S7-1500 AQ 4XU/I ST	SIPLUS S7-1500 AQ 8XU/I HS
Ambient conditions		
Ambient temperature during operation		
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost)	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• horizontal installation, max.	70 °C; = Tmax	70 °C; = Tmax; > +60 °C max. 4x ±10 V permissible
• vertical installation, min.	-40 °C; = Tmin	-40 °C; = Tmin; Startup @ -25 °C
• vertical installation, max.	40 °C; = Tmax	40 °C; = Tmax
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Technical specifications

Article number	**6AG1532-5HD00-7AB0**	**6AG1532-5HF00-7AB0**
Based on	**6ES7532-5HD00-0AB0**	**6ES7532-5HF00-0AB0**
	SIPLUS S7-1500 AQ 4XU/I ST	SIPLUS S7-1500 AQ 8XU/I HS
Resistance		
Coolants and lubricants		
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology		
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark		
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

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 SIMATIC 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 exposure to environmental substances) With 2 channels, max. 200 kHz; for 24 V encoder	**6AG1550-1AA01-7AB0**
Accessories	See SIMATIC S7-1500, TM Count 2x24V counter module, page 4/146

Technical specifications

Article number	**6AG1550-1AA01-7AB0**
Based on	**6ES7550-1AA01-0AB0** SIPLUS S7-1500 TM COUNT 2X24V
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	
• horizontal installation, max.	
• vertical installation, min.	-40 °C; = Tmin (incl. condensation/frost)
• vertical installation, max.	40 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

SIPLUS TM PosInput 2 position detection module

Overview

- 2-channel counter and position detection module with RS422 interface
- Comprehensive parameterization options for optimum adaptation to the task
- Offloading of controller through preprocessing on the module
- Position detection with incremental and SSI absolute-value encoders
- Speed and time period measuring
- Storage and comparison functions
- Connection of encoders with RS422 signals or 5 V TTL signals

Note:

SIPLUS extreme products are based on SIMATIC 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 PosInput 2 counter and positioning module (extended temperature range and medial exposure) With 2 channels, max. 1 MHz counter frequency; for SSI and incremental encoders with RS422 or 5 V TTL interface	**6AG1551-1AB00-7AB0**
Accessories	See SIMATIC S7-1500, TM PosInput 2 counter and positioning module, page 4/149

Technical specifications

Article number	**6AG1551-1AB00-7AB0**
Based on	**6ES7551-1AB00-0AB0** SIPLUS S7-1500 TM POSINPUT 2
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• horizontal installation, max.	70 °C; Please note derating for inductive loads
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C; Please note derating for inductive loads
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning in bedewed state), horizontal installation
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

SIPLUS CM PtP

4

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 kbps
  - RS 232C, max. 115.2 kbps
  - RS 422/RS 485, max. 19.2 kbps
  - RS 422/RS 485, max. 115.2 kbps
- 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 SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Ordering data

Ordering data	Article No.
SIPLUS CM PtP RS 232 BA communications module (Extended temperature range and exposure to environmental substances) Basic communications module with 1 interface RS 232, Freeport, 3964(R) and USS protocols, 9-pin D-sub connector, max. 19.2 Kbps	**6AG1540-1AD00-7AA0**
SIPLUS CM PtP RS 232 HF communications module (Extended temperature range and exposure to environmental substances) High Feature communications module with 1 interface RS 232, Freeport, 3964(R), USS and Modbus RTU protocols, 9-pin D-sub connector, max. 115.2 Kbps	**6AG1541-1AD00-7AB0**
SIPLUS CM PtP RS 422/485 BA communications module (Extended temperature range and exposure to environmental substances) Basic communications module with 1 interface RS 422/485, Freeport, 3964(R) and USS protocols, 15-pin sub D socket, max. 19.2 Kbps	**6AG1540-1AB00-7AA0**
SIPLUS CM PtP RS 422/485 HF communications module (Extended temperature range and exposure to environmental substances) High Feature communications module with 1 interface RS 422/485, Freeport, 3964(R), USS and Modbus RTU protocols, 15-pin sub D socket, max. 115.2 Kbps	**6AG1541-1AB00-7AB0**
Accessories	See SIMATIC S7-1500, CM PtP communications module, page 4/161

Technical specifications

Article number	**6AG1540-1AD00-7AA0**	**6AG1541-1AD00-7AB0**	**6AG1540-1AB00-7AA0**	**6AG1541-1AB00-7AB0**
Based on	**6ES7540-1AD00-0AA0**	**6ES7541-1AD00-0AB0**	**6ES7540-1AB00-0AA0**	**6ES7541-1AB00-0AB0**
	SIPLUS S7-1500 CM PTP RS232 BA	SIPLUS S7-1500 CM PTP RS232 HF	SIPLUS S7-1500 CM PTP RS422/485 BA	SIPLUS S7-1500 CM PTP RS422/485 HF
Ambient conditions				
Ambient temperature during operation				
• horizontal installation, min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -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
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)

Technical specifications

Article number	**6AG1540-1AD00-7AA0**	**6AG1541-1AD00-7AB0**	**6AG1540-1AB00-7AA0**	**6AG1541-1AB00-7AB0**
Based on	**6ES7540-1AD00-0AA0**	**6ES7541-1AD00-0AB0**	**6ES7540-1AB00-0AA0**	**6ES7541-1AB00-0AB0**
	SIPLUS S7-1500 CM PTP RS232 BA	SIPLUS S7-1500 CM PTP RS232 HF	SIPLUS S7-1500 CM PTP RS422/485 BA	SIPLUS S7-1500 CM PTP RS422/485 HF
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	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)
Resistance				
Coolants and lubricants				
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology				
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

SIPLUS NET CM 1542-5

Overview

DP-M	DP-S	FMS	PG/OP	S7/S5	
●	●		●	●	G_IK10_XX_10143

The CM 1542-5 communications module expands the SIMATIC S7-1500 Controller to include a PROFIBUS connection for communication with lower-level PROFIBUS devices in bandwidths from 9.6 kbps to 12 Mbps. The module can also be used to implement separate PROFIBUS lines, in other words, to control a number of different field devices via a number of 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 a SIMATIC S7-1500 to PROFIBUS at up to 12 Mbps (including 45.45 kbps)
- Communications 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 SIMATIC 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 communications module (Extended temperature range and exposure to environmental substances) Communications 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 communications module, page 4/166

Overview

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

G_IK10_XX_10353

The SIMATIC CP 1543-1 communications processor securely connects the new SIMATIC S7-1500 Controller to Industrial Ethernet networks. By combining a variety of security features such as an SPI (Stateful Packet Inspection) firewall, VPN and data encryption protocols such as FTPS and SNMPv3, the communications processor protects individual S7-1500 stations or even entire automation cells against unauthorized access.

The CP can also be used for linking the S7-1500 station into an IPv6-based network. All functions are configured by means of STEP 7 Professional V12 (TIA Portal) or higher.

The CP 1543-1 supports the following communications services:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE, FETCH/WRITE)
- IT communication
  - FTP functions (File Transfer Protocol FTP/FTPS) for file management and access to data blocks in the CPU (client and server function)
  - Sending emails via SMTP or ESMTP with "SMTP-Auth" for authentication on an email server (also with IPv6)
- Security functions
  - Stateful Packet Inspection (layers 3 and 4) firewall
  - Secure communication via VPN (IPsec)
  - Secure access to the web server of the CPU via the HTTPS protocol
  - Secure file transfer using FTPS
  - Secure transfer of the time of day (NTP)
  - SNMPv3 for tap-proof transfer of network analysis information
- Integration of an S7-1500 into IPv6-based networks; An IPv6-compliant IP address can be used for the following communication services:
  - FETCH/WRITE access (CP as server)
  - FTP server mode
  - FTP client mode with addressing by program block
  - Email transfer with addressing by program block

Note

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

Ordering data

	Article No.
SIPLUS NET CP 1543-1 communications processor (Extended temperature range and exposure to environmental substances) For connection of SIMATIC S7-1500 to Industrial Ethernet via TCP/IP, ISO and UDP and Security functions; 1 x RJ45 interface with 10/100/1000 Mbps; electronic manual on DVD	**6AG1543-1AX00-2XE0**
Accessories	See SIMATIC S7-1500, CP 1543-1 communications processor, page 4/173

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Technical specifications

Article number	**6AG1543-1AX00-2XE0**
Based on	**6GK7543-1AX00-0XE0**
Product type designation	SIPLUS NET CP 1543-1
ambient conditions	
ambient temperature	
• for vertical installation during operation	-40 ... +40 °C
• for horizontally arranged busbars during operation	-40 ... +70 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
installation altitude at height above sea level maximum	5 000 m
ambient condition relating to ambient temperature - air pressure - installation altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
relative humidity	
• with condensation according to IEC 60068-2-38 maximum	100 %; RH including condensation/frost (no commissioning when condensation is present), horizontal installation
chemical resistance to commercially available cooling lubricants	Yes; incl. airborne diesel and oil droplets
resistance to biologically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3B2 mold and fungal spores (excluding fauna), Class 3B3 on request
• conformity according to EN 60721-3-6	Yes; Class 6B2 mold, fungal and dry rot spores (excluding fauna)

Article number	**6AG1543-1AX00-2XE0**
Based on	**6GK7543-1AX00-0XE0**
Product type designation	SIPLUS NET CP 1543-1
resistance to chemically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) 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.
• conformity according to EN 60721-3-6	Yes
resistance to mechanically active substances	
• conformity according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
• conformity according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
coating for equipped printed circuit board according to EN 61086	Yes; Class 2 for high availability
type of coating protection against pollution according to EN 60664-3	Yes; Protection of the type 1
type of test of the coating according to MIL-I-46058C	Yes; Coating discoloration during service life possible
product conformity of the coating Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, class A
protection class IP	IP20

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
- Connectable core cross-sections: 0.25 mm^2 to 1.5 mm^2 (AWG 24 to 16)
- Front connector for 35 mm modules to be ordered separately; front connector for 25 mm modules included in scope of supply of modules

Design

- 40 terminals, arranged in two rows, numbered consecutively from 1 to 40
- Direct assignment of terminal to LED and labeling simplifies wiring, commissioning, and troubleshooting
- Holders for four potential bridges for simple and flexible creation of potential groups;
  four units are supplied with the front connector (optionally available as spare parts in packs of 20)
- Integrated shielding concept for analog modules and technology modules;
  allows space-saving installation without tools and ensures high ruggedness and EMC stability;
  components supplied with analog modules
- Cable ties for mechanical fixing of the cable bundle and for strain relief;
  1 unit supplied with front connector

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**
For 35 mm modules; 20 pieces; spare part	

System cabling for SIMATIC S7-1500 and ET 200MP

Overview

With two cabling systems, SIMATIC TOP connect ensures efficient wiring of the input and output module of the SIMATIC S7-1500 (35 mm unit): Fully modular connection for fast and clearly arranged connecting to sensors and actuators in the field, and flexible connection for simple wiring inside the control cabinet.

With the TIA Selection Tool, you can select suitable system cabling for the individual I/O modules with a simple mouse click. Suitable components for the respective I/O module are always offered. These can be transferred to the order list and then ordered in the Industry Mall.

More information is available on the internet at

http://www.siemens.com/tia-selection-tool

Design

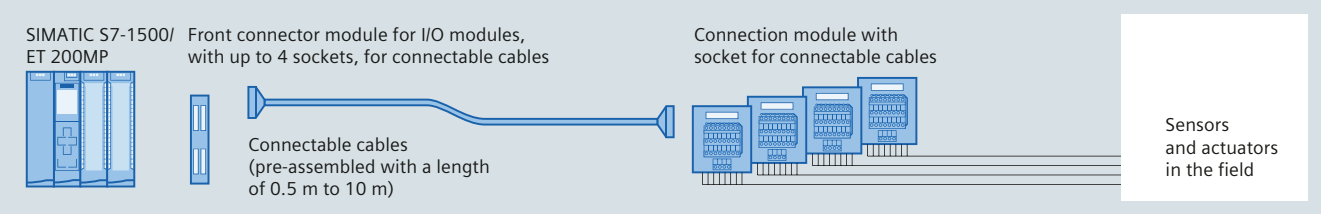
Two cabling variants are available for a wide range of control cabinet concepts:

Fully modular connection

The system consists of:

- Front connector module
- Connecting cable
- Connection modules in the following versions: Basic module, signal module and function module

Connection errors are thus practically excluded and installation overhead is significantly reduced. Systematic connection of the SIMATIC system. The assembly work for the connecting cables is drastically reduced thanks to the use of pre-assembled cables sold by the meter.



SIMATIC TOP connect for S7-1500/ET 200MP, fully modular connection

Flexible connection

Flexible connection with front connectors is available with 20 (Pin1 – 20) or 40 wired single cores.

These are available in lengths from 2.5 m to 10.0 m.

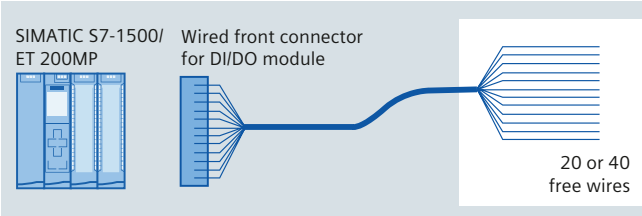
The single cores are available in different versions:

- Wire type H05V-K is used for industrial applications
- The UL/CSA-approved core is available for export to North America
- The halogen-free version is used where low smoke gas density in the event of fire is required, e.g. in building automation

The blue wires are numbered sequentially and can be routed direct to each element in the control cabinet. The numbering of the single cores corresponds to the coding of the front connector contacts.

In comparison to conventional single wiring, there is a cost saving of 50% for assembly, since the single cores that have already been checked on the connector are fixed.

Thus no complex pre-assembly of up to two times 20 single cores per module is necessary.



SIMATIC TOP connect for S7-1500/ET 200MP, flexible connection

Overview

The fully modular connection for connecting to the digital I/O modules of the SIMATIC S7-1500 or ET 200MP (35 mm design) consists of modified front connectors, called front connector modules, pre-assembled connecting cables of various lengths, and connection modules. Suitable components can be selected for the application in question and joined by means of simple plug-in connections. The connection modules are used instead of conventional terminal blocks and act as the interface to the sensors and actuators.

Benefits

- Front connector module, connecting cable and connection module are easy to plug in
- Fast, low-cost wiring
- In the case of digital signals, the supply voltage can be connected to the front connector module or the connection module
- Reduction in wiring errors, clear control cabinet wiring
- Byte-by-byte, or four-byte distribution of the signals in the case of digital signals
- Each component can be replaced individually
- Use of pre-assembled cables possible

Design

Front connector module

Modified front connectors, called front connector modules, are available for connecting to the I/O modules (35 mm design). These are plugged into the I/O module to be wired instead of the front connector. The front connector modules are available in many different versions for digital I/O modules, analog I/O modules and for the 24 V, 2-ampère module. The connecting cables are plugged into these front connector modules.

Connecting cable

There are different versions of the connecting cable.

As a pre-assembled 16-pole or 50-pole round cable (shielded or unshielded) it is available in lengths up to 10 m.

When pre-assembled, there are one or two connectors in insulation displacement method (female ribbon connectors) at both ends of the cable.

The connecting cable connects the front connector module with the connection module.

As a pre-assembled round cable (unshielded) with a 40-pole plug on the side of the I/O module (64-channel) and a 50-pole plug for the connection to the connection module (4-byte version). The cable connectors are designed with the insulation displacement method.

Connection module

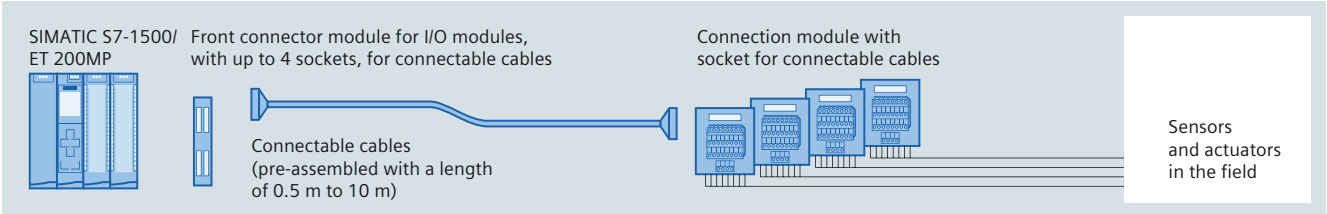
The system has both digital and analog connection modules for connecting the I/O signals. These are snapped onto the DIN rail. The connection modules with basic or signal functionality are available in 1-byte or 4-byte versions.

Connection modules are available for two different connection methods: with push-in or screw-type terminals. The potential can be fed in at the connection module or at the front connector module.

If other voltage or power levels are required in the field, the connection module for TPRo or TPOo output signals is used. For the TPRo connection module, relays are used for the implementation. For the TPOo connection module, optocouplers are used for the implementation. This converts the 24 V DC output signal simply and reliably to another voltage or power level. If 230 V AC or 110 V AC input signals have to be transmitted to the PLC in the field, a connection module with relay TPRi is available that simply converts the 230/110 V AC signal to 24 V DC. This means that there is always the same voltage level on the module side.

Use with optocouplers for the TPRo relay modules

If higher switching frequencies of the relay terminal module are required for the output signals, the relay can simply be replaced with an optocoupler (note technical specifications) in order to increase the switching frequency.



SIMATIC TOP connect for S7-1500/ET 200MP, fully modular connection

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Ordering data

Front connector modules[1)]

	Article No.
Front connector module for digital modules for the connection of 16-pole connecting cables	
Power supply via	
• Push-in	**6ES7921-5AH20-0AA0**
• Screw terminals	**6ES7921-5AB20-0AA0**
Front connector module for digital modules for the connection of 50-pole connecting cables	
Power supply via	
• Push-in	**6ES7921-5CH20-0AA0**
• Screw terminals	**6ES7921-5CB20-0AA0**
Front connector module for 2 A digital output modules for the connection of 16-pole connecting cables	
Power supply via	
• Push-in	**6ES7921-5AJ00-0AA0**
• Screw terminals	**6ES7921-5AD00-0AA0**
Front connector module for analog modules for the connection of 16-pole connecting cables	**6ES7921-5AK20-0AA0**
Front connector module for analog modules for the connection of 50-pole connecting cables	**6ES7921-5CK20-0AA0**

1) The terminal assignment of these front connector modules is unique and the dimensional drawings are shown in the Equipment Manual of SIMATIC TOP connect for S7-1500 and ET 200MP. The equipment manual is available as a download from Customer Support with the following ID: 95924607.

Connecting cables

	Article No.
Connecting cables for SIMATIC S7-1500	
Pre-assembled round cable	
16-pin, 0.14 mm^2	
Unshielded	
• 0.5 m	**6ES7923-0BA50-0CB0**
• 1.0 m	**6ES7923-0BB00-0CB0**
• 1.5 m	**6ES7923-0BB50-0CB0**
• 2.0 m	**6ES7923-0BC00-0CB0**
• 2.5 m	**6ES7923-0BC50-0CB0**
• 3.0 m	**6ES7923-0BD00-0CB0**
• 4.0 m	**6ES7923-0BE00-0CB0**
• 5.0 m	**6ES7923-0BF00-0CB0**
• 6.5 m	**6ES7923-0BG50-0CB0**
• 8.0 m	**6ES7923-0BJ00-0CB0**
• 10.0 m	**6ES7923-0CB00-0CB0**
Shielded	
• 1.0 m	**6ES7923-0BB00-0DB0**
• 2.0 m	**6ES7923-0BC00-0DB0**
• 2.5 m	**6ES7923-0BC50-0DB0**
• 3.0 m	**6ES7923-0BD00-0DB0**
• 4.0 m	**6ES7923-0BE00-0DB0**
• 5.0 m	**6ES7923-0BF00-0DB0**
• 6.5 m	**6ES7923-0BG50-0DB0**
• 8.0 m	**6ES7923-0BJ00-0DB0**
• 10.0 m	**6ES7923-0CB00-0DB0**
Version 4 x 16 to 1 x 50-pin, 0.14 mm^2	
Unshielded	
• 0.5 m	**6ES7923-5BA50-0EB0**
• 1.0 m	**6ES7923-5BB00-0EB0**
• 1.5 m	**6ES7923-5BB50-0EB0**
• 2.0 m	**6ES7923-5BC00-0EB0**
• 2.5 m	**6ES7923-5BC50-0EB0**
• 3.0 m	**6ES7923-5BD00-0EB0**
• 4.0 m	**6ES7923-5BE00-0EB0**
• 5.0 m	**6ES7923-5BF00-0EB0**
• 6.5 m	**6ES7923-5BG50-0EB0**
• 8.0 m	**6ES7923-5BJ00-0EB0**
• 10.0 m	**6ES7923-5CB00-0EB0**

	Article No.
Connecting cables for S7-1500	
Pre-assembled round cable	
50-pin, 0.14 mm^2	
Unshielded	
• 0.5 m	**6ES7923-5BA50-0CB0**
• 1.0 m	**6ES7923-5BB00-0CB0**
• 1.5 m	**6ES7923-5BB50-0CB0**
• 2.0 m	**6ES7923-5BC00-0CB0**
• 2.5 m	**6ES7923-5BC50-0CB0**
• 3.0 m	**6ES7923-5BD00-0CB0**
• 4.0 m	**6ES7923-5BE00-0CB0**
• 5.0 m	**6ES7923-5BF00-0CB0**
• 6.5 m	**6ES7923-5BG50-0CB0**
• 8.0 m	**6ES7923-5BJ00-0CB0**
• 10.0 m	**6ES7923-5CB00-0CB0**
Shielded	
• 1.0 m	**6ES7923-5BB00-0DB0**
• 2.0 m	**6ES7923-5BC00-0DB0**
• 2.5 m	**6ES7923-5BC50-0DB0**
• 3.0 m	**6ES7923-5BD00-0DB0**
• 4.0 m	**6ES7923-5BE00-0DB0**
• 5.0 m	**6ES7923-5BF00-0DB0**
• 6.5 m	**6ES7923-5BG50-0DB0**
• 8.0 m	**6ES7923-5BJ00-0DB0**
• 10.0 m	**6ES7923-5CB00-0DB0**
Version 1 x 40-pin to 1 x 50-pin, 0.14 mm^2	
Unshielded	
• 1.0 m	**6ES7923-5BB00-0GB0**
• 2.0 m	**6ES7923-5BC00-0GB0**
• 2.5 m	**6ES7923-5BC50-0GB0**
• 3.0 m	**6ES7923-5BD00-0GB0**

Ordering data

Connection modules

	Article No.
Connection module TP1	
For 1-wire connection, for 16-pin connecting cables	
• Push-in terminals without LEDs	**6ES7924-0AA20-0AC0**
• Screw-type terminals without LEDs	**6ES7924-0AA20-0AA0**
• Push-in terminals with LEDs	**6ES7924-0AA20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0AA20-0BA0**
For 1-wire connection, for 50-pin connecting cables	
• Push-in terminals without LEDs	**6ES7924-2AA20-0AC0**
• Screw-type terminals without LEDs	**6ES7924-2AA20-0AA0**
• Push-in terminals with LEDs	**6ES7924-2AA20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-2AA20-0BA0**
• Push-in terminals, sourcing input, with LEDs	**6ES7924-2AK20-0BC0**
• Screw-type terminals, sourcing input, with LEDs	**6ES7924-2AK20-0BA0**
• Push-in terminals, mid-point conductor signal, with LEDs	**6ES7924-2AM20-0BC0**
• Screw-type terminals, mid-point conductor signal, with LEDs	**6ES7924-2AM20-0BA0**
Connection module TP3	
For 3-wire connection, for 16-pin connecting cables	
• Push-in terminals without LEDs	**6ES7924-0CA20-0AC0**
• Screw-type terminals without LEDs	**6ES7924-0CA20-0AA0**
• Push-in terminals with LEDs	**6ES7924-0CA20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0CA20-0BA0**
• Push-in terminals with LEDs and one isolating terminal per channel	**6ES7924-0CH20-0BC0**
• Screw-type terminals with LEDs and one isolating terminal per channel	**6ES7924-0CH20-0BA0**
• Push-in terminals with LEDs and fuse per channel	**6ES7924-0CL20-0BC0**
• Screw-type terminals with LEDs and fuse per channel	**6ES7924-0CL20-0BA0**
For 3-wire connection, for 50-pin connecting cables	
• Push-in terminals without LEDs	**6ES7924-2CA20-0AC0**
• Screw-type terminals without LEDs	**6ES7924-2CA20-0AA0**
• Push-in terminals with LEDs	**6ES7924-2CA20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-2CA20-0BA0**
Connection module TPRo	
Relay module for 8 outputs, relay as normally open contact	
• Push-in terminals with LEDs	**6ES7924-0BD20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0BD20-0BA0**
Connection module TPRi	
Relay module for 8 inputs (110 V AC), relay as normally open contact	
• Push-in terminals with LEDs	**6ES7924-0BG20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0BG20-0BA0**

	Article No.
Connection module TPRi	
Relay module for 8 inputs (230 V AC), relay as normally open contact	
• Push-in terminals with LEDs	**6ES7924-0BE20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0BE20-0BA0**
Connection module TPOo	
Optocoupler module for 8 outputs (max. 24 V DC/4 A)	
• Push-in terminals with LEDs	**6ES7924-0BF20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0BF20-0BA0**
Connection module for digital output modules 2 A	
Connection module TP2	
• Push-in terminals without LEDs	**6ES7924-0BB20-0AC0**
• Screw-type terminals without LEDs	**6ES7924-0BB20-0AA0**
Connection module for analog modules	
Connection module TPA, 16-pin	
• Push-in terminals without LEDs	**6ES7924-0CC20-0AC0**
• Screw-type terminals without LEDs	**6ES7924-0CC20-0AA0**
Connection module TPA, 50-pin	
• Push-in terminals without LEDs	**6ES7924-2CC20-0AC0**
• Screw-type terminals without LEDs	**6ES7924-2CC20-0AA0**
Accessories	
Shield plate for analog connection module	
PU = 4 units (for connection of 15-pin connecting cable)	**6ES7928-1AA20-4AA0**
PU = 4 units (for connection of 15-pin connecting cable)	**6ES7928-1BA20-4AA0**
Shield connection clamp	
For shield plate at SIMATIC end, PU = 10 units	**6ES7590-5BA00-0AA0**
For shield plate at field end, 2 x 2 ... 6 mm	**6ES7390-5AB00-0AA0**
For shield plate at field end, 3 ... 8 mm	**6ES7390-5BA00-0AA0**
For shield plate at field end, 4 ... 13 mm	**6ES7390-5CA00-0AA0**

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Technical specifications front connector modules

Rated operating voltage	**24 V DC**
Max. permissible operating voltage	60 V DC
Max. permissible continuous current • per connector pin	1 A
Max. permissible total current	2 A/byte
Permissible ambient temperature	0 to +60 °C
Test voltage	0.5 kV, 50 Hz, 60 sec.
Clearance and creepage distances	IEC 664 (1980), IEC 664 A (1981), in accordance with DIN VDE 0110 (01.89), overvoltage class II, pollution degree 2

Wiring rules for the front connector modules

SIMATIC TOP connect front connector module, connection for potential infeed		
	Push-in	Screw terminals
	Modules up to 4 connections	
Connectable cable cross-sections		
• Solid conductors	No	
• Flexible cables with/without wire end ferrule	0.25 to 1.5 mm^2	
Number of cables per connection	1 or a combination of 2 wires up to 1.5 mm^2 (total) in a common wire end ferrule	
Max. diameter of the cable insulation	3.1 mm	
Stripped length of the cables		
• Without insulating collar	6 mm	
• With insulating collar	-	
Wire end ferrules according to DIN 46228		
• Without insulating collar	Form A; 5 to 7 mm long	
• With insulating collar 0.25 to 1.0 mm^2	-	
• With insulating collar 1.5 mm^2	-	
Blade width of the screwdriver	3.5 mm (cylindrical design)	
Tightening torque for connecting the cables	-	0.4 Nm to 0.7 Nm

Technical specifications connecting cable

Technical specifications of connecting cable from SIMATIC S7 to connection module	
Operating voltage	60 V DC
Continuous current per signal conductor	1 A
Max. total current	4 A/byte
Operating temperature	0 to +60 °C
Outer diameter of pre-assembled round cable in mm unshielded/shielded (16-pole)	Approx. 6.5/7.0

Overview

Flexible connection of the cabling system consists of a S7-1500 front connector which has the 20 or 40 single cores already in place and which directly connects the I/O modules (35 mm design) with the sensors and actuators inside the control cabinet. With a cross-section of 0.5 square mm, the single wires are also suitable for higher currents and are available in different lengths and versions: as H05V-K cores (PVC insulation), H05Z-K (halogen-free insulation) or with UL/CSA certified cores. The halogen-free version has a low smoke gas density in the event of a fire and is thus particularly well suited for use in buildings.

Can be used for SIMATIC S7-1500 and ET 200MP digital modules (24 V DC, 35 mm design)

The front connectors with single cores replace the SIMATIC standard connectors

- 6ES7592-1AM00-0XB0 and 6ES7592-1BM00-0XB0

Technical specifications

Front connector with single cores for 16 channels (pins 1-20)	
Rated operating voltage	24 V DC
Permissible continuous current with simultaneous load of all cores, max.	1.5 A
Permissible ambient temperature	0 to 60 °C
Core type	H05V-K, UL 1007/1569; CSA TR64, or halogen-free
Number of single cores	20
Core cross-section	0.5 mm^2; Cu
Bundle diameter in mm	approx. 15
Wire color	Blue, RAL 5010
Designation of cores	Numbered from 1 to 20 (front connector contact = core number)
Assembly	Screw contacts

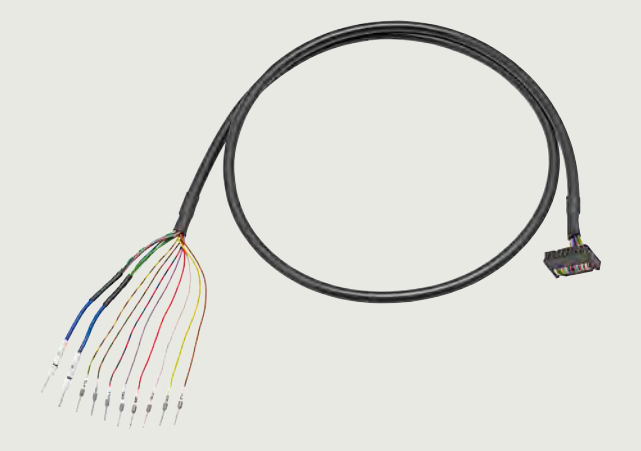
Front connector with single cores for 32 channels (pins 1-40)	
Rated operating voltage	24 V DC
Permissible continuous current with simultaneous load of all cores, max.	1.5 A
Permissible ambient temperature	0 to 60 °C
Core type	H05V-K, UL 1007/1569; CSA TR64, or halogen-free
Number of single cores	40
Core cross-section	0.5 mm^2; Cu
Bundle diameter in mm	approx. 17
Wire color	Blue, RAL 5010
Designation of cores	Numbered from 1 to 40 (front connector contact = core number)
Assembly	Screw contacts

Ordering data

	Article No.
Front connector with single cores for 32 channels (pins 1-40)	
Core type H05V-K (0.5 mm^2 with screw connection)	
• 2.5 m	**6ES7922-5BC50-0AC0**
• 3.2 m	**6ES7922-5BD20-0AC0**
• 5.0 m	**6ES7922-5BF00-0AC0**
• 6.5 m	**6ES7922-5BG50-0AC0**
• 8.0 m	**6ES7922-5BJ00-0AC0**
• 10.0 m	**6ES7922-5CB00-0AC0**
Core type H05Z-K, halogen-free (0.5 mm^2 with screw connection)	
• 2.5 m	**6ES7922-5BC50-0HC0**
• 3.2 m	**6ES7922-5BD20-0HC0**
• 5.0 m	**6ES7922-5BF00-0HC0**
• 6.5 m	**6ES7922-5BG50-0HC0**
• 8.0 m	**6ES7922-5BJ00-0HC0**
• 10.0 m	**6ES7922-5CB00-0HC0**
Core type UL/CSA-certified (0.5 mm^2 with screw connection)	
• 3.2 m	**6ES7922-5BD20-0UC0**
• 5.0 m	**6ES7922-5BF00-0UC0**
• 6.5 m	**6ES7922-5BG50-0UC0**
Front connector with single cores for 16 channels (pins 1-20)	
Core type H05V-K (0.5 mm^2 with screw connection)	
• 2.5 m	**6ES7922-5BC50-0AB0**
• 3.2 m	**6ES7922-5BD20-0AB0**
• 5.0 m	**6ES7922-5BF00-0AB0**
• 6.5 m	**6ES7922-5BG50-0AB0**
• 8.0 m	**6ES7922-5BJ00-0AB0**
• 10.0 m	**6ES7922-5CB00-0AB0**
Core type H05Z-K, halogen-free (0.5 mm^2 with screw connection)	
• 2.5 m	**6ES7922-5BC50-0HB0**
• 3.2 m	**6ES7922-5BD20-0HB0**
• 5.0 m	**6ES7922-5BF00-0HB0**
• 6.5 m	**6ES7922-5BG50-0HB0**
• 8.0 m	**6ES7922-5BJ00-0HB0**
• 10.0 m	**6ES7922-5CB00-0HB0**
Core type UL/CSA-certified (0.5 mm^2 with screw connection)	
• 3.2 m	**6ES7922-5BD20-0UB0**
• 5.0 m	**6ES7922-5BF00-0UB0**
• 6.5 m	**6ES7922-5BG50-0UB0**

System cabling for SIMATIC S7-1500 IO (25 mm), ET 200SP, S7-1200 and LOGO!

Overview



SIMATIC TOP connect universal connecting cable

The wiring of the

- SIMATIC S7-1500 IO (25 mm)
- SIMATIC ET 200SP
- SIMATIC S7-1200
- LOGO!

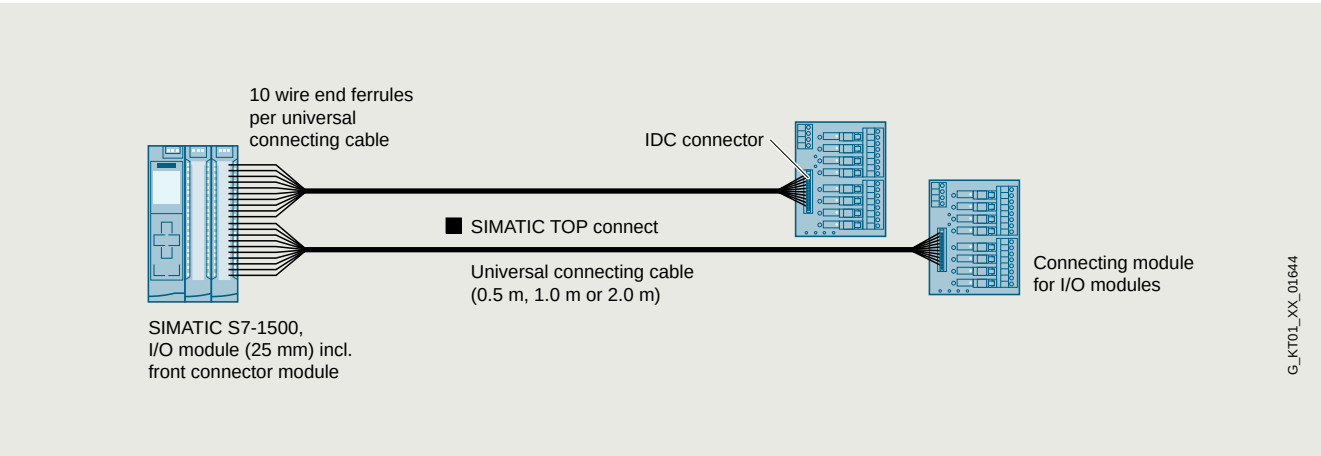
with the sensors/actuators is a significant factor with respect to time/cost overhead during configuration, control cabinet design, procurement and ease of servicing. The SIMATIC TOP connect system cabling makes connection easy, fast and secure.

Design

The unshielded universal connection cable is offered for a wide range of control cabinet concepts.

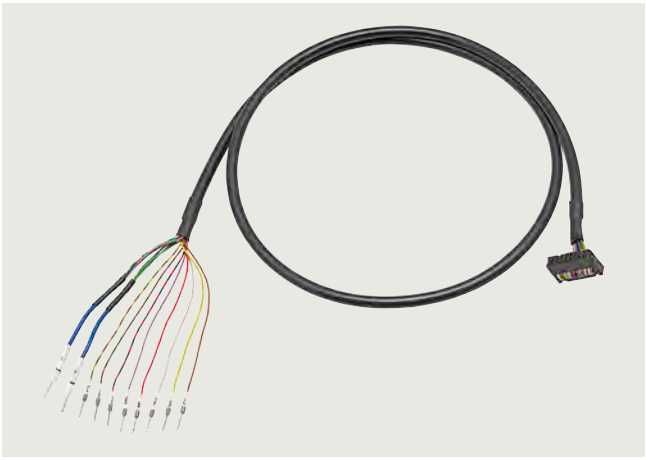
It comprises:

- 16-pin round cable with a core cross-section of 0.14 mm^2, pre-assembled with wire end ferrules for connection to the controller:
  - Labeled with "0" … "7" for the control inputs/outputs
  - Labeled with "M" for mass
  - Labeled with "L+" for 24 V DC potential
- 16-pin ID (insulation displacement) connector for connection to the SIMATIC TOP connect connection modules for 8 I/Os:
  - 3-wire connection using the appropriate connection module for quick, error-free wiring
  - Galvanic isolation and adaptation using a coupling relay for easy implementation of potential groups in the system
  - High output current (up to 4 A), even for higher switching frequencies, using an optocoupler module (overload and short-circuit proof)
  - Implementation of isolating terminals using switch modules enabling individual signals to be measured
  - Channel-wise protection of I/Os using a fuse module with a thermal fuse



SIMATIC TOP connect universal connection cable

Overview Universal connecting cables



SIMATIC TOP connect universal connecting cable

The universal connecting cable constitutes the link between the standard connection of the SIMATIC S7-1500 IO (25 mm), SIMATIC ET 200SP, SIMATIC S7-1200 or LOGO! and the SIMATIC TOP connect terminal module. It transmits 8 signals and the supply voltage. The connecting cable is available in lengths of 0.5 m / 1.0 m / 2.0 m. the maximum technically feasible length is 30 m.

Ordering data	Article No.
Universal connecting cables for SIMATIC S7-1500 IO (25 mm), SIMATIC ET 200SP, SIMATIC S7-1200 and LOGO!	
16 x 0.14 mm² unshielded	
• 0.5 m	**6ES7923-0BA50-0FB0**
• 1.0 m	**6ES7923-0BB00-0FB0**
• 2.0 m	**6ES7923-0BC00-0FB0**

Overview connection modules

The connection modules are used instead of conventional terminal blocks and act as the interface between the PLC and signals from the field. All digital modules with 8 I/Os can be used.

Ordering data	Article No.
TP1 connection module	
For 1-conductor connection, for 16-pin connecting cables	
• Push-in terminals without LEDs	**6ES7924-0AA20-0AC0**
• Screw-type terminals without LEDs	**6ES7924-0AA20-0AA0**
• Push-in terminals with LEDs	**6ES7924-0AA20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0AA20-0BA0**
TP3 connection module	
For 3-conductor connection, for 16-pin connecting cables	
• Push-in terminals without LEDs	**6ES7924-0CA20-0AC0**
• Screw-type terminals without LEDs	**6ES7924-0CA20-0AA0**
• Push-in terminals with LEDs	**6ES7924-0CA20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0CA20-0BA0**
• Push-in terminals with LEDs and one isolating terminal per channel	**6ES7924-0CH20-0BC0**
• Screw-type terminals with LEDs and one isolating terminal per channel	**6ES7924-0CH20-0BA0**
• Push-in terminals with LEDs and fuse per channel	**6ES7924-0CL20-0BC0**
• Screw-type terminals with LEDs and fuse per channel	**6ES7924-0CL20-0BA0**
TPRo connection module	
Relay module for 8 outputs, relay as normally open contact	
• Push-in terminals with LEDs	**6ES7924-0BD20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0BD20-0BA0**
TPRi connection module	
Relay module for 8 inputs (230 V AC), relay as normally open contact	
• Push-in terminals with LEDs	**6ES7924-0BE20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0BE20-0BA0**
TPRi connection module	
Relay module for 8 inputs (110 V AC), relay as normally open contact	
• Push-in terminals with LEDs	**6ES7924-0BG20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0BG20-0BA0**
TPOo connection module	
Optocoupler module for 8 outputs (max. 24 V DC/4 A)	
• Push-in terminals with LEDs	**6ES7924-0BF20-0BC0**
• Screw-type terminals with LEDs	**6ES7924-0BF20-0BA0**

SIPLUS digital F-input modules

Overview

SIPLUS digital fail-safe input module:

F-DI 16x24 V DC

Important properties:

- 16-channel fail-safe digital input module for ET 200MP/S7-1500
- For fail-safe reading of sensor information (1 or 2 channels)
- Provides integral discrepancy evaluation for 2-out-of-2 signals
- 4 internal sensor supplies (incl. test function) onboard
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- LED display for error, operation, supply voltage and status
- Clear module labeling
  - Plain text identification of the module type
  - Complete Article No.
  - 2D matrix code (order and serial number)
  - Connection diagram
  - Hardware and firmware version
- Optional labeling accessories
  - Labeling sheets, yellow
- The modules support PROFIsafe in both PROFIBUS and PROFINET configurations. Can be used with all fail-safe SIMATIC S7-1500 F-CPUs in the central configuration, as well as ET 200MP distributed I/O with all other SIMATIC S7 F-CPUs.

Note:

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

Ordering data

	Article No.
SIPLUS F-digital input module	
16 inputs, 24 V DC, PROFISAFE	**6AG1526-1BH00-2AB0**
Accessories	
Coding elements	**6AG1592-6EF00-2AA0**
E-coding element type F for SIPLUS ET 200MP modules F-DI/F-DQ; 5 units, spare part	
Other accessories	See SIMATIC S7-1500 F-digital input modules, page 4/208

Technical specifications

Article number	**6AG1526-1BH00-2AB0**
Based on	**6ES7526-1BH00-0AB0**
	SIPLUS S7-1500 F-DI 16x24VDC
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax
• vertical installation, min.	-30 °C; = Tmin
• vertical installation, max.	40 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

Overview

SIPLUS digital fail-safe output module:
F-DQ 8x24 V DC 2 A PPM

Important properties:

- 8-channel digital fail-safe output module for ET 200MP/S7-1500
- Fail-safe 2-channel activation (parameterizable PM/PP switching) of actuators
- Actuators can be controlled up to 2 A
- Certified up to SIL 3 (IEC 61508), PL e (ISO 13849)
- LED display for error, operation, supply voltage and status
- Clear module labeling
  - Plain text identification of the module type
  - Complete Article No.
  - 2D matrix code (article and serial number)
  - Connection diagram
  - Hardware and firmware version
- Optional labeling accessories
  - Labeling sheets, yellow
- The module supports PROFIsafe in both PROFIBUS and PROFINET configurations.
- Can be used with all fail-safe SIMATIC S7-1500 F-CPUs in the central configuration, as well as ET 200MP distributed I/O with all other SIMATIC S7 F-CPUs.

Note:

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

Ordering data

	Article No.
SIPLUS F-digital output module	
8 outputs, 24 V DC, 2 A, PROFISAFE, switching to sourcing/sinking output	**6AG1526-2BF00-2AB0**
Accessories	
Coding elements	**6AG1592-6EF00-2AA0**
E-coding element type F for SIPLUS ET 200MP modules F-DI/F-DQ; 5 units, spare part	
Other accessories	See SIMATIC S7-1500 F-digital output modules, page 4/210

Technical specifications

Article number	**6AG1526-2BF00-2AB0**
Based on	**6ES7526-2BF00-0AB0**
	SIPLUS S7-1500 F-DQ 8x24VDC/2A
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	-30 °C; = Tmin (incl. condensation/frost)
• horizontal installation, max.	60 °C; = Tmax
• vertical installation, min.	-30 °C; = Tmin
• vertical installation, max.	40 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Coolants and lubricants	
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology	
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating	
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A

1-phase, 24 V DC (for S7-1500 and ET200MP)

Overview

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 makes it 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 standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	**6AG1332-4BA00-7AA0**	**6AG1333-4BA00-7AA0**
Based on	**6EP1332-4BA00**	**6EP1333-4BA00**
Product	SIPLUS S7-1500 PM1507	SIPLUS S7-1500 PM1507
Power supply, type	24 V/3 A	24 V/8 A
environmental conditions		
ambient temperature		
• in horizontal mounting position during operation	-40 ... +70 °C; with natural convection	-40 ... +70 °C; with natural convection
• during storage and transport	-40 ... +85 °C	-40 ... +85 °C
installation altitude at height above sea level maximum	6 000 m	6 000 m
ambient condition relating to ambient temperature - air pressure - installation altitude	In case of operation at altitudes of 2000 - 6000 m above sea level: Output power derating of -7.5 %/1000 m or reduction of the ambient temperature by 5 K/1000 m	In case of operation at altitudes of 2000 - 6000 m above sea level: Output power derating of -7.5 %/1000 m or reduction of the ambient temperature by 5 K/1000 m
relative humidity with condensation according to IEC 60068-2-38 maximum	100 %; RH incl. condensation/frost (no commissioning if condensation is present), horizontal installation	100 %; RH incl. condensation/frost (no commissioning if condensation is present), horizontal installation
chemical resistance to commercially available cooling lubricants	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air
resistance to biologically active substances conformity according to EN 60721-3-3	Yes; Class 3B2 mold, fungal, sponge spores (except fauna); class 3B3 upon request	Yes; Class 3B2 mold, fungal, sponge spores (except fauna); class 3B3 upon request
resistance to chemically active substances conformity according to EN 60721-3-3	Yes; Class 3C4 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity level 3)	Yes; Class 3C4 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity level 3)
resistance to mechanically active substances conformity according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust	Yes; Class 3S4 incl. sand, dust
resistance to biologically active substances conformity according to EN 60721-3-6	Yes; Class 6B2 mold, fungal, sponge spores (except fauna)	Yes; Class 6B2 mold, fungal, sponge spores (except fauna)
resistance to chemically active substances conformity according to EN 60721-3-6	Yes; Class 6C3 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity level 3)	Yes; Class 6C3 (RH < 75%) incl. salt spray acc. to EN 60068-2-52 (severity level 3)
resistance to mechanically active substances conformity according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust	Yes; Class 6S3 incl. sand, dust
coating for equipped printed circuit board according to EN 61086	Yes; Class 2 for high availability	Yes; Class 2 for high availability
type of coating protection against pollution according to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
type of test of the coating according to MIL-I-46058C	Yes; Discoloration of the coating during service life possible	Yes; Discoloration of the coating during service life possible
product conformity of the coating Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal Coating, Class A	Yes; Conformal Coating, Class A

Ordering data	Article No.
SIPLUS S7-1500 PM 1507	
(Extended temperature range and exposure to environmental substances)	
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**

	Article No.
Accessories	See SITOP in SIMATIC design, 1-phase, 24 V DC (for S7-1500 and ET200MP), page 4/214

SIPLUS system power supplies

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
- Engineering and configuration via STEP 7 V12

Note:

SIPLUS extreme products are based on SIMATIC 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 system power supply	
(Extended temperature range and exposure to environmental substances)	
For supplying the backplane bus of the S7-1500 Controller	
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, page 4/218

Technical specifications

Article number	**6AG1505-0KA00-7AB0**	**6AG1505-0RA00-7AB0**	**6AG1507-0RA00-7AB0**
Based on	**6ES7505-0KA00-0AB0**	**6ES7505-0RA00-0AB0**	**6ES7507-0RA00-0AB0**
	SIPLUS S7-1500 PS 25W 24V DC	SIPLUS S7-1500 PS 60W 24/48/60V DC	SIPLUS S7-1500 PS 60W 120/230V AC/DC
Ambient conditions			
Ambient temperature during operation			
• min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C
• 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
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m	5 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	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

Article number	**6AG1505-0KA00-7AB0**	**6AG1505-0RA00-7AB0**	**6AG1507-0RA00-7AB0**
Based on	**6ES7505-0KA00-0AB0**	**6ES7505-0RA00-0AB0**	**6ES7507-0RA00-0AB0**
	SIPLUS S7-1500 PS 25W 24V DC	SIPLUS S7-1500 PS 60W 24/48/60V DC	SIPLUS S7-1500 PS 60W 120/230V AC/DC
Resistance			
Coolants and lubricants			
- Resistant to commercially available coolants and lubricants	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air	Yes; incl. diesel and oil droplets in the air
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology			
- Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
- Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating			
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A

DIN rail

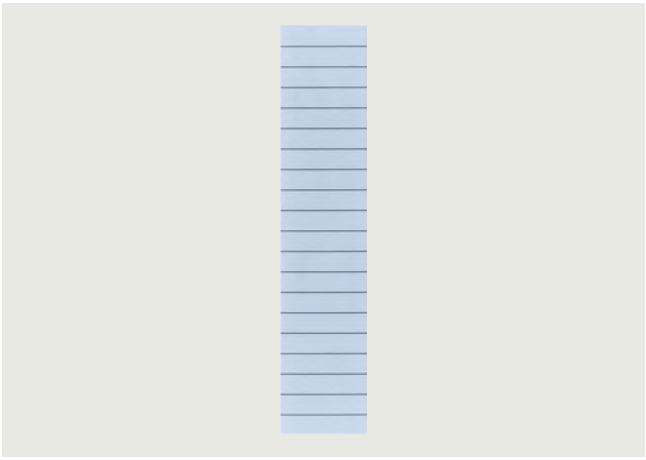
Overview

- Aluminum DIN rail for mounting the SIMATIC S7-1500 or ET 200MP
- With integrated top hat DIN rail for snapping on a wide range of standard components
- Attachment of modules with a single screw
- Installation by screwing to the control cabinet wall
- Entire length of rail can be used
- Can also be mounted on low or flat top hat DIN rails, e.g. in control cabinets and terminals boxes, using top hat DIN rail adapter

Ordering data

	Article No.
SIMATIC S7-1500 DIN rail	
Fixed lengths, with grounding elements	
• 160 mm	**6ES7590-1AB60-0AA0**
• 245 mm	**6ES7590-1AC40-0AA0**
• 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	
• 2 000 mm	**6ES7590-1BC00-0AA0**
PE connection element for 2 000 mm DIN rail	**6ES7590-5AA00-0AA0**
20 units	
DIN rail adapter	**6ES7590-6AA00-0AA0**
For adapting S7-1500 DIN rails on low or flat DIN rails, as pre-assembled in control cabinets and terminal boxes, for example. An adapter must be placed every 25 cm. Including mounting hardware. 10 units per packing unit	
SIMATIC Manual Collection	**6ES7998-8XC01-8YE0**
Electronic manuals on DVD, multilingual: All manuals for S7-1200/1500/200/300/400,LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering SW, Runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT	
SIMATIC Manual Collection update service for 1 year	**6ES7998-8XC01-8YE2**
Current Manual Collection DVD and the three subsequent updates	

Overview



- Film sheets for the application-specific, automatic labeling of SIMATIC S7-1500 I/O modules using standard laser printers
- Direct printing possible from the TIA Portal
  - No double entry of symbols and/or addresses
  - Saves time and avoids typing errors
- Plain color films, tear-resistant, dirt-repellent
- Simple handling:
  - Perforated labeling sheets in DIN A4 format for easy separation of the labeling strips.
  - Detached strips can be inserted directly into the I/O modules.
- Different colors to differentiate module types; yellow reserved for fail-safe systems

Ordering data

	Article No.
DIN A4 labeling sheet	
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 20 labeling strips each for I/O modules; perforated, Al gray	**6ES7592-1AX00-0AA0**
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: All manuals for S7-1200/1500/200/300/400,LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering SW, Runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT	**6ES7998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current Manual Collection DVD and the three subsequent updates	**6ES7998-8XC01-8YE2**

Overview

Front doors

- Versions:
  - Universal front doors for digital and analog I/O modules
  - Universal front doors for the interface module IM155-5 PN ST
- Included in the scope of supply of the respective modules. Can be ordered as a spare part in a set consisting of five universal (unlabeled) front doors.
- Front doors for I/O modules: Universal labeling sheets and cabling diagrams are included. Cabling diagrams can be detached from preperforated sheets and inserted inside the door.

U connector

- To interconnect the modules (self-assembling backplane bus)
- Implementation of a rugged, interference-free station setup through
  - Consistent separation of supply voltage of modules and data signals
  - Fully shielded, gold-plated contacts for the data bus
- Included in the scope of supply of each module. Available as spare part in sets of 5.

Shielding

- Components for implementing the integrated S7-1500 shielding concept:
  - 24 V DC infeed element for supplying the analog module: strict separation of infeed and analog signals ensures high EMC stability.
  - Shield bracket for insertion in the front connector: allows a low-impedance connection and optimally dissipates interference.
  - Universal shield terminal: connects the cable shield with the shield bracket and is simultaneously used for mechanical fixing.
- Included in the scope of supply of the analog modules. Available as a spare part in two versions:
  - Shielding set, comprising infeed element, shield bracket, and shield terminal (pack of 5 units each)
  - Individual shield terminals (pack of 20)
- No tool required for assembly/disassembly

Ordering data	Article No.
Universal front door for IM 155-5 PN ST 5 front doors; spare part	**6ES7528-0AA70-7AA0**
Universal front door for I/O modules 5 front doors; with 5 labeling strips (front) and 5 cabling diagrams per front door; spare part	
• For 35 mm modules	**6ES7528-0AA00-7AA0**
• For 25 mm modules	**6ES7528-0AA00-0AA0**
U connector 5 units; spare part	**6ES7590-0AA00-0AA0**
Shielding set I/O Infeed element, shielding bracket, and shield terminal; 5 units, spare part	
• For 35 mm modules	**6ES7590-5CA00-0AA0**
• For 25 mm modules	**6ES7590-5CA10-0XA0**
Shield terminal element 10 units; spare part	**6ES7590-5BA00-0AA0**

	Article No.
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: All manuals for S7-1200/1500/200/300/400,LOGO!, SIMATIC DP, PC, PG, STEP 7, Engineering SW, Runtime SW, SIMATIC HMI, SIMATIC NET, SIMATIC IDENT	**6ES7998-8XC01-8YE0**
SIMATIC Manual Collection update service for 1 year Current Manual Collection DVD and the three subsequent updates	**6ES7998-8XC01-8YE2**