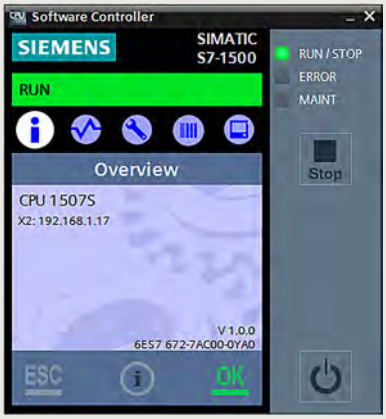
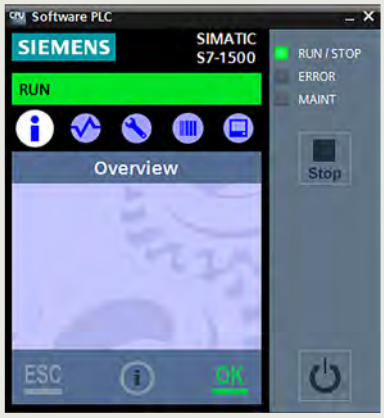


CPU 1507S Windows

Overview



- SIMATIC S7-1500 Software Controller with Windows for implementing the functions of a SIMATIC S7-1500 Controller on a SIMATIC IPC
- For use as a PC-based controller in machines with distributed I/O via PROFINET
- For utilizing IPC onboard interfaces and PC plug-in cards for PROFINET connections
- Execution of functions and algorithms implemented with high-level languages under Windows (C/C++, C#, VB) and locally in the CPU 1507S (C/C++)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes as well as synchronous operation, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes (motion control functionalities require PROFINET IRT capability via CP 1625 and a PCIe slot on the IPC)
- Integrated web server for diagnostics with the option of creating user-defined web pages
- OPC UA server (data access) and client as Runtime option for easy connection of the SIMATIC S7-1500 Software Controller to Windows applications or non-Siemens devices/systems

New in version V30.1

- Optimized for PC-based control tasks with the IPC BX-39A Microbox PC and the IPC PX-39A (Pro) Panel PC
- Support for the current IPC generation SIMATIC IPC227G and IPC277G (Pro)
- Can also be used on the IPC427E and IPC627E Box PCs, the IPC477E (Pro) and IPC677E Panel PCs, and the IPC647E and IPC847E Rack PCs
- Support of UEFI boot and M.2 SSD on all IPC platforms
- Improved commissioning:
  The resource allocation for the SIMATIC S7-1500 Software Controller, e.g. the interfaces used for PROFINET, is now set using a separate tool and no longer with the two-stage download from STEP 7. This permits a flexible choice of IPC without modifying the STEP 7 project
- Communication between Windows applications and the SIMATIC S7-1500 Software Controller is achieved via pure TCP/IP links. Communication with the SIMATIC S7-1500 Software Controller is possible directly through the PC interfaces on the Windows side ("bridging")
- No direct support from PROFIBUS, PROFIBUS support is only possible with an additional plug-in card.
- In order to use the SIMATIC S7-1500 Software Controller V30.1 instead of a previous version (e.g. V21.9), changes in configuration and installation are required.

Ordering data

	Article No.
SIMATIC S7-1500 Software Controller CPU 1507S For implementing the function of an S7-1500 Controller on SIMATIC IPCs **Target system:** Optimized for PC-based control tasks with IPC BX-39A Microbox PC and IPC PX-39A (Pro) Panel PC; Can also be used with IPC277G (Pro) Panel PC, IPC477E (Pro) Panel PC, IPC677E Panel PC, IPC227G Box PC, IPC427E Box PC, IPC627E Box PC, IPC647E Rack PC, IPC847E Rack PC **Requirement:** Windows 10 (64-bit) with UEFI boot; for supported Windows 10 version, see Technical specifications **Type of delivery:** en, de, fr, es, it, zh	
• Version V30.1 for Windows; Single license for one installation Software on DVD, license key on USB flash drive	**6ES7672-7AC02-0YA0**
• Version V30.1 for Windows; Single license for one installation; Software download including license key [1]	**6ES7672-7AC02-0YG0**
• Version V30.1 for Windows; Upgrade license for one installation; For upgrading existing installations with CPU 1507S Version 2; Software download including license key [1]	**6ES7672-7AC02-0YK0**
• Version V21.9; Single license for one installation; Software on DVD, license key on USB flash drive	**6ES7672-7AC01-0YA0**
• Version V21.9; Single license for one installation; Software download including license key [1]	**6ES7672-7AC01-0YG0**

[1] Up-to-date information and download availability can be found at http://www.siemens.com/tia-online-software-delivery.

CPU 1507S Windows

Ordering data

	Article No.
Accessories	
SIMATIC IPC	
• SIMATIC IPC BX-39A Microbox PC	**6AG4142-.....-....**
• SIMATIC IPC PX-39A Panel PC	**6AV7242-.....-....**
• SIMATIC IPC PX-39A Pro Panel PC	**6AV7252-.....-....**
• SIMATIC IPC227G Nanobox PC	**6ES7647-8C...-....**
• SIMATIC IPC277G Panel PC	**6AV7886-0....-....**
• SIMATIC IPC277G Pro Panel PC	**6AV7886-1....-....**
• SIMATIC IPC427E Microbox PC	**6AG4141-.....-....**
• SIMATIC IPC477E Panel PC	**6AV7241-.....-....**
• SIMATIC IPC477E Pro Panel PC	**6AV7251-.....-....**
• SIMATIC IPC627E Box PC	**6AG4131-3....-....**
• SIMATIC IPC677E Panel PC	**6AV7261-.....-....**
• SIMATIC IPC647E Rack PC	**6AG4112-3....-....**
• SIMATIC IPC847E Rack PC	**6AG4114-3....-....**
CP 1625 communications processor PCI Express x1 card for connecting PROFINET with IRT to the SIMATIC S7-1500 Software Controller	**6ES7648-2CF10-1AA0**
CP 5622 communications processor PCI Express x1 card (32-bit) for connecting a programming device or PC to PROFIBUS (can only be used with version V21.9)	**6GK1562-2AA00**
CP 5623 communications processor PCI Express x1 card (32-bit) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master or DP device, incl. PG and FDL protocols; single license for 1 installation, Runtime software, software and electronic manual on CD-ROM, Conformance Class A; for operating system support see SIMATIC NET software en/de (can only be used with version V21.9)	**6GK1562-3AA00**

.

8

Technical specifications

Article number	**6ES7672-7AC01-0YA0** SIMATIC Software Controller CPU 1507S	**6ES7672-7AC02-0YA0** SIMATIC Software Controller CPU 1507S
General information		
Product type designation	CPU 1507S	CPU 1507S
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V17	V20
Memory		
Work memory		
• integrated (for program)	5 Mbyte	5 Mbyte
• integrated (for data)	20 Mbyte	20 Mbyte
• integrated (for CPU function library of CPU Runtime)	50 Mbyte	50 Mbyte
Load memory		
• integrated (on PC mass storage)	320 Mbyte	320 Mbyte
CPU processing times		
for bit operations, typ.	1 ns; On IPC427E, Intel Xeon processor	1 ns; On IPC427E, Intel Xeon processor
for word operations, typ.	2 ns; On IPC427E, Intel Xeon processor	2 ns; On IPC427E, Intel Xeon processor
for fixed point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor	2 ns; On IPC427E, Intel Xeon processor
for floating point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor	2 ns; On IPC427E, Intel Xeon processor
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times		
• Number	2 048	2 048
IEC timer		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity		
Flag		
• Size, max.	16 kbyte	16 kbyte
Address area		
I/O address area		
• Inputs	32 kbyte	32 kbyte
• Outputs	32 kbyte	32 kbyte
Time of day		
Clock		
• Type	Software clock, synchronizable, no battery backup	Software clock, synchronizable, no battery backup

Technical specifications

Article number	**6ES7672-7AC01-0YA0** SIMATIC Software Controller CPU 1507S	**6ES7672-7AC02-0YA0** SIMATIC Software Controller CPU 1507S
Interfaces		
Number of interfaces	3	3
1. Interface		
Interface type	CP 1625	CP 1625
Number of connections	128	128
Interface types		
• RJ 45 (Ethernet)	Yes	Yes
- Transmission rate, max.	100 Mbit/s	100 Mbit/s
- Industrial Ethernet status LED	Yes	Yes
• Number of ports	2	2
• integrated switch	Yes	Yes
Protocols		
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
PROFINET IO Controller		
Services		
- Isochronous mode	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- shortest clock pulse	500 µs	500 µs
- IRT	Yes	Yes
- PROFIenergy	Yes	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625
- Number of connectable IO Devices, max.	256	256
- Of which IO devices with IRT, max.	64	64
- Number of connectable IO Devices for RT, max.	256	256
- of which in line, max.	256	256
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8	8
- IO Devices changing during operation (partner ports), supported	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class		1
Address area		
- Inputs, max.	8 kbyte	8 kbyte
- Outputs, max.	8 kbyte	8 kbyte

CPU 1507S Windows

Technical specifications

Article number	**6ES7672-7AC01-0YA0**	**6ES7672-7AC02-0YA0**
	SIMATIC Software Controller CPU 1507S	SIMATIC Software Controller CPU 1507S
PROFINET IO Device		
Services		
- PG/OP communication	Yes	Yes
- Isochronous mode	No	No
- IRT	Yes	Yes
- PROFIenergy	Yes	Yes
- Prioritized startup	Yes; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)	Yes; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- Asset management record	Yes	Yes
- PROFINET Security Class		SNMP Configuration and DCP Read Only
2. Interface		
Interface type	Onboard PROFINET / IE interface X2/X3 of the SIMATIC IPC, Intel Springville i210T	Onboard PROFINET / IE interface X2/X3 of the SIMATIC IPC, Intel Springville i210T
Number of connections	128	128
Interface types		
• RJ 45 (Ethernet)	Yes	Yes
- Transmission rate, max.	100 Mbit/s	100 Mbit/s
- Industrial Ethernet status LED	Yes	Yes
• Number of ports	1	1
• integrated switch	No	No
Protocols		
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• PROFIBUS DP master		No
• PROFIBUS DP device		No
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes	Yes
• Web server	Yes	Yes
• Media redundancy	No	No
PROFINET IO Controller		
Services		
- Isochronous mode	No	No
- IRT	No	No
- PROFIenergy	Yes	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Number of connectable IO Devices for RT, max.	128	128
- of which in line, max.	128	128
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8	8
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class		1
Address area		
- Inputs, max.	8 kbyte	8 kbyte
- Outputs, max.	8 kbyte	8 kbyte

CPU 1507S Windows

Technical specifications

Article number	**6ES7672-7AC01-0YA0** SIMATIC Software Controller CPU 1507S	**6ES7672-7AC02-0YA0** SIMATIC Software Controller CPU 1507S
PROFINET IO Device		
Services		
- Isochronous mode	No	No
- IRT	No	No
- PROFIenergy	Yes	Yes
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- Asset management record	Yes	Yes
- PROFINET Security Class		SNMP Configuration and DCP Read Only
3. Interface		
Interface type	PROFIBUS with CP 5622, CP 5622 onboard	
Number of connections	44	
Interface types		
• RS 485	Yes	
Protocols		
• PROFIBUS DP master	Yes	
• PROFIBUS DP device	No	
• SIMATIC communication	Yes; no PG/STEP 7 connection possible	
PROFIBUS DP master		
• max. number of DP devices	64	
Services		
- Equidistance	No	
- Isochronous mode	No	
Address area		
- Inputs, max.	8 kbyte	
- Outputs, max.	8 kbyte	
4. Interface		
Interface type	PROFIBUS with CP 5623	
Number of connections	44	
Interface types		
• RS 485	Yes	
Protocols		
• PROFIBUS DP master	Yes	
• PROFIBUS DP device	No	
• SIMATIC communication	Yes; no PG/STEP 7 connection possible	
PROFIBUS DP master		
• max. number of DP devices	125	
Protocols		
Number of connections		
• Number of connections, max.	128	128
Redundancy mode		
Media redundancy		
- MRP	Yes	Yes
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50
SIMATIC communication		
• S7 routing	Yes	Yes; not via Windows interfaces
OPC UA		
• OPC UA Client	Yes; Data access (read, write), method call	Yes; Data access (read, write), method call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space	Yes; Data access (read, write, subscribe), method call, custom address space

CPU 1507S Windows

Technical specifications

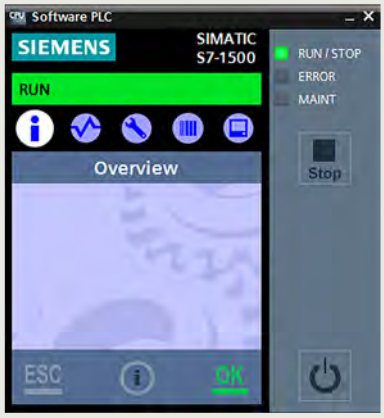
Article number	**6ES7672-7AC01-0YA0** SIMATIC Software Controller CPU 1507S	**6ES7672-7AC02-0YA0** SIMATIC Software Controller CPU 1507S
Supported technology objects		
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
• Number of available Motion Control resources for technology objects	4 800	4 800
• Required Motion Control resources		
- per speed-controlled axis	40	40
- per positioning axis	80	80
- per synchronous axis	160	160
- per external encoder	80	80
- per output cam	20	20
- per cam track	160	160
- per probe	40	40
Controller		
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring		
• High-speed counter	Yes	Yes
Hardware requirement		
Hardware required	SIMATIC IPC2x7E, IPC4x7D/E, IPC6x7D/E, IPC8x7D/E	SIMATIC IPC227G, IPC277G (Pro), IPC427E, IPC477E (Pro), IPC BX-39A, IPC PX-39A (Pro), IPC627E, IPC677E, IPC647E, IPC847E
Processor		
• Single-core processor	No	No
• Single-core processor with hyper-threading	No	No
• Multi-core processor	Yes	Yes
• Multi-core processor with hyper-threading	Yes	Yes
• occupied cores	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S
Memory		
• Work memory, min.	4 Gbyte	8 Gbyte
• Hard disk memory required for installation	720 Mbyte	720 Mbyte
• Temporary hard disk memory for installation	230 Mbyte	230 Mbyte
• Hard disk memory required at runtime	400 Mbyte	561 Mbyte
Operating systems		
Runs under operating system		
• Windows 7	Yes; Professional, Enterprise, Ultimate (32 bit and 64 bit); Windows Embedded Standard 7 with delivery image of the SIMATIC IPC	No
• Windows 10	Yes; Windows 10 Enterprise 2016 LTSB, 64-bit, MUI on IPC2x7E, IPC4x7E, IPC6x7D, IPC8x7D; Windows 10 Enterprise 2019 LTSC 64-bit, MUI on IPC2x7E, IPC4x7E, IPC6x7E, IPC8x7E	Yes; Windows 10 Enterprise 2019 LTSC and 2021 LTSC, 64-bit, MUI

Technical specifications

Article number	**6ES7672-7AC01-0YA0** SIMATIC Software Controller CPU 1507S	**6ES7672-7AC02-0YA0** SIMATIC Software Controller CPU 1507S
Configuration		
Configuration/programming		
Programming language		
- LAD	Yes	Yes
- FBD	Yes	Yes
- STL	Yes	Yes
- SCL	Yes	Yes
- CFC	No	Yes
- GRAPH	Yes	Yes
Know-how protection		
• User program protection/ password protection	Yes	Yes
• Copy protection	Yes	Yes
• Block protection	Yes	Yes
Access protection		
• protection of confidential configuration data		Yes
• Protection level: Write protection	Yes	Yes
• Protection level: Read/write protection	Yes	Yes
• Protection level: Complete protection	Yes	Yes
• User administration		Yes
• Number of users		100
Open Development interfaces		
• Size of ODK SO file, max.	9.8 Mbyte	9.8 Mbyte

CPU 1507S Linux

Overview



- SIMATIC S7-1500 Software Controller V30.1 with Linux (Industrial OS 3.2.4 or higher) as operating system, for implementing the functions of a SIMATIC S7-1500 controller on SIMATIC IPC
- For use as a PC-based controller in machines with distributed I/O via PROFINET
- For utilizing IPC onboard interfaces and PC plug-in cards for PROFINET connections
- Execution of functions and algorithms implemented with high-level languages (C++/Python) on Linux (Industrial OS 3.2.4 or higher) using the Realtime Information Backbone (RIB)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes as well as synchronous operation, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes (motion control functionalities require PROFINET IRT capability via CP 1625 and a PCIe slot on the IPC)
- Integrated web server for diagnostics with the option of creating user-defined web pages
- OPC UA server (data access) and client as Runtime option for easy connection of the SIMATIC S7-1500 Software Controller to Windows applications or non-Siemens devices/systems

New in version V30.1: General Sales Release Linux (Industrial OS 3.2.4 or higher)

- Optimized for PC-based control tasks with the IPC BX-39A Microbox PC and the IPC PX-39A (Pro) Panel PC
- Support for the current IPC generation SIMATIC IPC227G and IPC277G (Pro)
- Can also be used on the Box PCs IPC427E and IPC627E, the Panel PCs IPC477E (Pro) and IPC677E, and the Rack PCs IPC647E and IPC847E
- Support of UEFI boot and M.2 SSD on all IPC platforms
- Improved commissioning:
  The resource allocation for the SIMATIC S7-1500 Software Controller, e.g. the interfaces used for PROFINET, is now set using a separate tool and no longer with the two-stage download from STEP 7. This permits a flexible choice of IPC without modifying the STEP 7 project
- Communication between Windows applications and the SIMATIC S7-1500 Software Controller is achieved via pure TCP/IP links. Communication with the SIMATIC S7-1500 Software Controller is possible directly through the PC interfaces on the Windows side ("bridging")
- No direct support from PROFIBUS, PROFIBUS support is only possible with an additional plug-in card.
- In order to use the SIMATIC S7-1500 Software Controller V30.1 instead of a previous version (e.g. V21.9), changes in configuration and installation are required.

Ordering data

	Article No.
SIMATIC S7-1500 Software Controller CPU 1507S For implementing the function of an S7-1500 Controller on SIMATIC IPCs with Linux as operating system (Industrial OS 3.2.4 or higher) **Target system:** Optimized for PC-based control tasks with IPC BX-39A Microbox PC and IPC PX-39A (Pro) Panel PC; Can also be used with IPC277G (Pro) Panel PC, IPC477E (Pro) Panel PC, IPC677E Panel PC, IPC227G Box PC, IPC427E Box PC, IPC627E Box PC, IPC647E Rack PC, IPC847E Rack PC **Requirement:** Linux (Industrial OS 3.2.4 or higher) with UEFI boot; For supported Linux version, see Technical specifications **Type of delivery:** en, de, fr, es, it, zh	
• Version V30.1 for Linux; Single license for one installation; software download including license key [1]	**6ES7672-7AD02-0YG0**
Accessories	
SIMATIC IPC	
• SIMATIC IPC BX-39A Microbox PC	**6AG4142-.....-....**
• SIMATIC IPC PX-39A Panel PC	**6AV7242-.....-....**
• SIMATIC IPC PX-39A Pro Panel PC	**6AV7252-.....-....**
• SIMATIC IPC227G Nanobox PC	**6ES7647-8C...-....**
• SIMATIC IPC277G Panel PC	**6AV7886-0....-....**
• SIMATIC IPC277G Pro Panel PC	**6AV7886-1....-....**
• SIMATIC IPC427E Microbox PC	**6AG4141-.....-....**
• SIMATIC IPC477E Panel PC	**6AV7241-.....-....**
• SIMATIC IPC477E Pro Panel PC	**6AV7251-.....-....**
• SIMATIC IPC627E Box PC	**6AG4131-3....-....**
• SIMATIC IPC677E Panel PC	**6AV7261-.....-....**
• SIMATIC IPC647E Rack PC	**6AG4112-3....-....**
• SIMATIC IPC847E Rack PC	**6AG4114-3....-....**

[1] Up-to-date information and download availability can be found at http://www.siemens.com/tia-online-software-delivery.

CPU 1507S Linux

Ordering data

	Article No.
CP 1625 communications processor PCI Express x1 card for connecting PROFINET with IRT to the SIMATIC S7-1500 Software Controller	**6ES7648-2CF10-1AA0**
CP 5622 communications processor PCI Express x1 card (32-bit) for connecting a programming device or PC to PROFIBUS (can only be used with version V21.9)	**6GK1562-2AA00**
CP 5623 communications processor PCI Express x1 card (32-bit) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master or DP device, incl. PG and FDL protocols; single license for 1 installation, Runtime software, software and electronic manual on CD-ROM, Conformance Class A; for operating system support see SIMATIC NET software en/de (can only be used with version V21.9)	**6GK1562-3AA00**

.

Technical specifications

Article number	**6ES7672-7AD02-0YG0** SIMATIC Soft. Control CPU 1507S Linux DL
General information	
Product type designation	CPU 1507S
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V20
Memory	
Work memory	
• integrated (for program)	5 Mbyte
• integrated (for data)	20 Mbyte
• integrated (for CPU function library of CPU Runtime)	50 Mbyte
Load memory	
• integrated (on PC mass storage)	320 Mbyte
CPU processing times	
for bit operations, typ.	1 ns; On IPC427E, Intel Xeon processor
for word operations, typ.	2 ns; On IPC427E, Intel Xeon processor
for fixed point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor
for floating point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)

Article number	**6ES7672-7AD02-0YG0** SIMATIC Soft. Control CPU 1507S Linux DL
Data areas and their retentivity	
Flag	
• Size, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte
• Outputs	32 kbyte
Time of day	
Clock	
• Type	Software clock, synchronizable, no battery backup
Interfaces	
Number of interfaces	3
1. Interface	
Interface type	CP 1625
Number of connections	128
Interface types	
• RJ 45 (Ethernet)	Yes
- Transmission rate, max.	100 Mbit/s
- Industrial Ethernet status LED	Yes
• Number of ports	2
• integrated switch	Yes
Protocols	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes; Optionally also encrypted
• Web server	Yes
• Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0

CPU 1507S Linux

Technical specifications

Article number	**6ES7672-7AD02-0YG0** SIMATIC Soft. Control CPU 1507S Linux DL
PROFINET IO Controller	
Services	
- Isochronous mode	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- shortest clock pulse	500 µs
- IRT	Yes
- PROFIenergy	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625
- Number of connectable IO Devices, max.	256
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	256
- of which in line, max.	256
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8
- IO Devices changing during operation (partner ports), supported	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1
Address area	
- Inputs, max.	8 kbyte
- Outputs, max.	8 kbyte
PROFINET IO Device	
Services	
- PG/OP communication	Yes
- Isochronous mode	No
- IRT	Yes
- PROFIenergy	Yes
- Prioritized startup	Yes; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
- Asset management record	Yes
- PROFINET Security Class	SNMP Configuration and DCP Read Only

Article number	**6ES7672-7AD02-0YG0** SIMATIC Soft. Control CPU 1507S Linux DL
2. Interface	
Interface type	Onboard PROFINET / IE interface X2/X3 of the SIMATIC IPC, Intel Springville i210T
Number of connections	128
Interface types	
• RJ 45 (Ethernet)	Yes
- Transmission rate, max.	100 Mbit/s
- Industrial Ethernet status LED	Yes
• Number of ports	1
• integrated switch	No
Protocols	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• PROFIBUS DP master	No
• PROFIBUS DP device	No
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	No
PROFIBUS DP master	
• max. number of DP devices	Profibus interface is not available.
Services	
- Equidistance	No
- Isochronous mode	No
PROFINET IO Controller	
Services	
- Isochronous mode	No
- IRT	No
- PROFIenergy	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Number of connectable IO Devices for RT, max.	128
- of which in line, max.	128
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1
Address area	
- Inputs, max.	8 kbyte
- Outputs, max.	8 kbyte

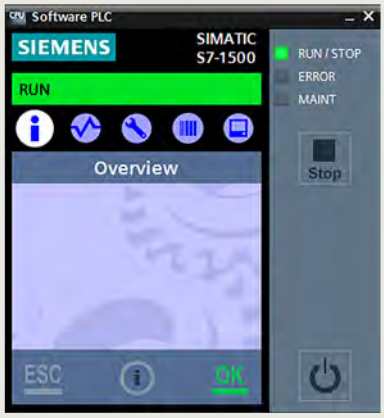
Technical specifications

Article number	**6ES7672-7AD02-0YG0** SIMATIC Soft. Control CPU 1507S Linux DL
PROFINET IO Device	
Services	
- Isochronous mode	No
- IRT	No
- PROFIenergy	Yes
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
- Asset management record	Yes
Protocols	
Number of connections	
• Number of connections, max.	128
Redundancy mode	
Media redundancy	
- MRP	Yes
- MRPD	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50
SIMATIC communication	
• S7 routing	Yes; not via Linux interfaces
OPC UA	
• OPC UA Client	Yes; Data access (read, write), method call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space
Supported technology objects	
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
• Number of available Motion Control resources for technology objects	4 800
• Required Motion Control resources	
- per speed-controlled axis	40
- per positioning axis	80
- per synchronous axis	160
- per external encoder	80
- per output cam	20
- per cam track	160
- per probe	40
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes

Article number	**6ES7672-7AD02-0YG0** SIMATIC Soft. Control CPU 1507S Linux DL
Hardware requirement	
Hardware required	SIMATIC IPC2x7G, IPC4x7E, BX-39A, PX-39A
Processor	
• Single-core processor	No
• Single-core processor with hyper-threading	No
• Multi-core processor	Yes
• Multi-core processor with hyper-threading	Yes
• occupied cores	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S
Memory	
• Work memory, min.	8 Gbyte
• Hard disk memory required for installation	3 Gbyte
• Temporary hard disk memory for installation	300 Mbyte
• Hard disk memory required at runtime	1 700 Mbyte
Configuration	
Configuration/programming	
Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes
- CFC	Yes
- GRAPH	Yes
Know-how protection	
• User program protection/ password protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• protection of confidential configuration data	Yes
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
• User administration	Yes
• Number of users	100
Open Development interfaces	
• Size of ODK SO file, max.	9.8 Mbyte

CPU 1508S Windows

Overview



- SIMATIC S7-1500 Software Controller with Windows for implementing the functions of a SIMATIC S7-1500 Controller on a SIMATIC IPC
- For use with control applications with increased requirements for program and data memory
- For use as a PC-based controller in machines with distributed I/O via PROFINET
- For utilizing IPC onboard interfaces and PC plug-in cards for PROFINET connections
- Optimized for PC-based control tasks with the IPC627E Box PC, the IPC677E Panel PC, and the IPC647E and IPC847E Rack PCs
- Execution of functions and algorithms implemented with high-level languages under Windows (C/C++, C#, VB) and locally in the CPU 1508S (C/C++)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes as well as synchronous operation, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes (motion control functionalities require PROFINET IRT capability via CP 1625 and a PCIe slot on the IPC)
- OPC UA server (data access) and client as Runtime option for easy connection of the SIMATIC S7-1500 Software Controller to Windows applications or non-Siemens devices/systems

New in V30.1

- Support for the current IPC generation SIMATIC IPC427E, IPC477E as well as SIMATIC IPC BX-39A and PX-39A
- Support of UEFI boot and M.2 SSD on all IPC platforms
- Improved commissioning:
  The resource allocation for the SIMATIC S7-1500 Software Controller, e.g. the interfaces used for PROFINET, is now set using a separate tool and no longer with the two-stage download from STEP 7. This permits a flexible choice of IPC without modifying the STEP 7 project
- Communication between Windows applications and the SIMATIC S7-1500 Software Controller is achieved via pure TCP/IP links. Communication with the SIMATIC S7-1500 Software Controller is possible directly through the PC interfaces on the Windows side ("bridging")
- No direct support from PROFIBUS, PROFIBUS support is only possible with an additional plug-in card
- In order to use the SIMATIC S7-1500 Software Controller V30.1 instead of a previous version (e.g. V21.9), changes in configuration and installation are required.

Ordering data

	Article No.
SIMATIC S7-1500 Software Controller CPU 1508S For implementing the function of a SIMATIC S7-1500 Controller on a SIMATIC IPC **Target system:** Optimized for PC-based control tasks with: IPC677E Panel PC, IPC627E Box PC, IPC647E Rack PC, IPC847E Rack PC; Can also be used with: IPC477E Panel PC, IPC PX-39A Panel PC, IPC427E Box PC, IPC BX-39A Box PC; **Requirement:** Windows 10 (64-bit) with UEFI boot; For supported Windows 10 version, see Technical specifications **Type of delivery:** en, de, fr, es, it, zh	
• Version V30.1 for Windows; Single license for one installation Software on DVD, license key on USB flash drive	**6ES7672-8AC02-0YA0**
• Version V30.1 for Windows; Single license for one installation; Software download including license key [1]	**6ES7672-8AC02-0YG0**
• Version V30.1 for Windows; Upgrade license for one installation; For upgrading existing installations with CPU 1508S Version 2 Software download including license key [1]	**6ES7672-8AC02-0YK0**
• Version V21.9; Single license for one installation Software and documentation on DVD, license key on USB flash drive	**6ES7672-8AC01-0YA0**
• Version V21.9; Single license for one installation; Software download including license key [1]	**6ES7672-8AC01-0YG0**

[1] Up-to-date information and download availability can be found at http://www.siemens.com/tia-online-software-delivery.

CPU 1508S Windows

Ordering data

	Article No.
Accessories	
SIMATIC IPC	
• SIMATIC IPC627E Box PC	**6AG4131-3....-....**
• SIMATIC IPC677E Panel PC	**6AV7261-.....-....**
• SIMATIC IPC427E Microbox PC	**6AG4141-.....-....**
• SIMATIC IPC477E Panel PC	**6AV7241-.....-....**
• SIMATIC IPC BX-39A Microbox PC	**6AG4142-.....-....**
• SIMATIC IPC PX-39A Panel PC	**6AV7242-.....-....**
• SIMATIC IPC647E Rack PC	**6AG4112-3....-....**
• SIMATIC IPC847E Rack PC	**6AG4114-3....-....**
For more information, see Catalog ST 80 / ST PC	
CP 1625 communications processor PCI Express x1 card for connecting PROFINET with IRT to the SIMATIC S7-1500 Software Controller	**6ES7648-2CF10-1AA0**
CP 5622 communications processor PCI Express x1 card (32-bit) for connecting a programming device or PC to PROFIBUS (can only be used with version V21.9)	**6GK1562-2AA00**
CP 5623 communications processor PCI Express x1 card (32-bit) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master or DP device, incl. PG and FDL protocols; single license for 1 installation, Runtime software, software and electronic manual on CD-ROM, Conformance Class A; for operating system support see SIMATIC NET software; en/de (can only be used with version V21.9)	**6GK1562-3AA00**

.

Technical specifications

Article number	**6ES7672-8AC01-0YA0** SIMATIC Software Controller CPU 1508S	**6ES7672-8AC02-0YA0** SIMATIC Software Controller CPU 1508S
General information		
Product type designation	CPU 1508S	CPU 1508S
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V17	V20
Memory		
Work memory		
• integrated (for program)	10 Mbyte	10 Mbyte
• integrated (for data)	100 Mbyte	100 Mbyte
• integrated (for CPU function library of CPU Runtime)	50 Mbyte	50 Mbyte
Load memory		
• integrated (on PC mass storage)	1 024 Mbyte	1 024 Mbyte
CPU processing times		
for bit operations, typ.	1 ns; On IPC427E, Intel Xeon processor	1 ns; On IPC427E, Intel Xeon processor
for word operations, typ.	2 ns; On IPC427E, Intel Xeon processor	2 ns; On IPC427E, Intel Xeon processor
for fixed point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor	2 ns; On IPC427E, Intel Xeon processor
for floating point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor	2 ns; On IPC427E, Intel Xeon processor
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times		
• Number	2 048	2 048
IEC timer		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity		
Flag		
• Size, max.	16 kbyte	16 kbyte
Address area		
I/O address area		
• Inputs	32 kbyte	32 kbyte
• Outputs	32 kbyte	32 kbyte
Time of day		
Clock		
• Type	Software clock, synchronizable, no battery backup	Software clock, synchronizable, no battery backup
Interfaces		
Number of interfaces	3	3

CPU 1508S Windows

Technical specifications

Article number	**6ES7672-8AC01-0YA0**	**6ES7672-8AC02-0YA0**
	SIMATIC Software Controller CPU 1508S	SIMATIC Software Controller CPU 1508S
1. Interface		
Interface type	CP 1625	CP 1625
Number of connections	192	192
Interface types		
• RJ 45 (Ethernet)	Yes	Yes
- Transmission rate, max.	100 Mbit/s	100 Mbit/s
- Industrial Ethernet status LED	Yes	Yes
• Number of ports	2	2
• integrated switch	Yes	Yes
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy		Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
PROFINET IO Controller		
Services		
- Isochronous mode	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- shortest clock pulse	500 µs	500 µs
- IRT	Yes	Yes
- PROFIenergy	Yes	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625
- Number of connectable IO Devices, max.	256; the maximal amount of supported devices on all interfaces (PN/PB) is 384 in total	256; the maximal amount of supported devices on all interfaces (PN/PB) is 384 (256+128) in total; theoretically it should be 509 (256+128+125), but it is accepted to be limited to 384
- Of which IO devices with IRT, max.	64	64
- Number of connectable IO Devices for RT, max.	256	256
- of which in line, max.	256	256
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8	8
- IO Devices changing during operation (partner ports), supported	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class		1
Address area		
- Inputs, max.	16 kbyte	16 kbyte
- Outputs, max.	16 kbyte	16 kbyte
PROFINET IO Device		
Services		
- Isochronous mode	No	No
- IRT	Yes	Yes
- PROFIenergy	Yes	Yes
- Prioritized startup	Yes	Yes
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- Asset management record	Yes	Yes
- PROFINET Security Class		SNMP Configuration and DCP Read Only

CPU 1508S Windows

Technical specifications

Article number	**6ES7672-8AC01-0YA0** SIMATIC Software Controller CPU 1508S	**6ES7672-8AC02-0YA0** SIMATIC Software Controller CPU 1508S
2. Interface		
Interface type	Onboard PROFINET / IE interface X2 of the SIMATIC IPC, Intel Springville i210T	Onboard PROFINET / IE interface X2 of the SIMATIC IPC, Intel Springville i210T
Number of connections	192	192
Interface types		
• RJ 45 (Ethernet)	Yes	Yes
- Transmission rate, max.	100 Mbit/s	100 Mbit/s
- Industrial Ethernet status LED	Yes	Yes
• Number of ports	1	1
• integrated switch	No	No
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• PROFIBUS DP master		No
• PROFIBUS DP device		No
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes	Yes
• Web server	Yes	Yes
• Media redundancy	No	No
PROFINET IO Controller		
Services		
- Isochronous mode	No	No
- IRT	No	No
- PROFIenergy	Yes	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Number of connectable IO Devices for RT, max.	128; the maximal amount of supported devices on all interfaces (PN/PB) is 384 (256+128) in total; theoretically it should be 509 (256+128+125), but it is accepted to be limited to 384	128; the maximal amount of supported devices on all interfaces (PN/PB) is 384 (256+128) in total; theoretically it should be 509 (256+128+125), but it is accepted to be limited to 384
- of which in line, max.	128	128
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8	8
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class		1
Address area		
- Inputs, max.	8 kbyte	8 kbyte
- Outputs, max.	8 kbyte	8 kbyte
PROFINET IO Device		
Services		
- Isochronous mode	No	No
- IRT	No	No
- PROFIenergy	Yes	Yes
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- Asset management record	Yes	Yes
- PROFINET Security Class		SNMP Configuration and DCP Read Only
3. Interface		
Interface type	PROFIBUS with CP 5622, CP 5622 onboard	
Number of connections	44	
Interface types		
• RS 485	Yes	

CPU 1508S Windows

Technical specifications

Article number	**6ES7672-8AC01-0YA0** SIMATIC Software Controller CPU 1508S	**6ES7672-8AC02-0YA0** SIMATIC Software Controller CPU 1508S
Protocols		
• PROFIBUS DP master	Yes	
• PROFIBUS DP device	No	
• SIMATIC communication	Yes; no PG/STEP 7 connection possible	
PROFIBUS DP master		
• max. number of DP devices	64	
Services		
- Equidistance	No	
- Isochronous mode	No	
Address area		
- Inputs, max.	8 kbyte	
- Outputs, max.	8 kbyte	
4. Interface		
Interface type	PROFIBUS with CP 5623	
Number of connections	44	
Interface types		
• RS 485	Yes	
Protocols		
• PROFIBUS DP master	Yes	
• PROFIBUS DP device	No	
• SIMATIC communication	Yes; no PG/STEP 7 connection possible	
PROFIBUS DP master		
• max. number of DP devices	125	
Protocols		
Number of connections		
• Number of connections, max.	192	192
Redundancy mode		
Media redundancy		
- MRP	Yes	Yes
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50
SIMATIC communication		
• S7 routing	Yes	Yes
OPC UA		
• OPC UA Client	Yes; Data access (read, write), method call	Yes; Data access (read, write), method call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space	Yes; Data access (read, write, subscribe), method call, custom address space
Supported technology objects		
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
• Number of available Motion Control resources for technology objects	4 800	4 800
• Required Motion Control resources		
- per speed-controlled axis	40	40
- per positioning axis	80	80
- per synchronous axis	160	160
- per external encoder	80	80
- per output cam	20	20
- per cam track	160	160
- per probe	40	40
Controller		
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring		
• High-speed counter	Yes	Yes

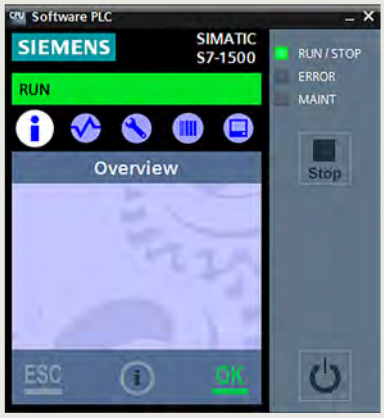
CPU 1508S Windows

Technical specifications

Article number	**6ES7672-8AC01-0YA0** SIMATIC Software Controller CPU 1508S	**6ES7672-8AC02-0YA0** SIMATIC Software Controller CPU 1508S
Hardware requirement		
Hardware required	SIMATIC IPC4x7E, IPC6x7D/E, IPC8x7D/E	SIMATIC IPC427E, IPC477E (Pro), IPC BX-39A, IPC PX-39A (Pro), IPC627E, IPC677E, IPC647E, IPC847E
Processor		
• Single-core processor	No	No
• Single-core processor with hyper-threading	No	No
• Multi-core processor	Yes	Yes
• Multi-core processor with hyper-threading	Yes	Yes
• occupied cores	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S
Memory		
• Work memory, min.	8 Gbyte	8 Gbyte
• Hard disk memory required for installation	720 Mbyte	720 Mbyte
• Temporary hard disk memory for installation	230 Mbyte	230 Mbyte
• Hard disk memory required at runtime	1 000 Mbyte	1 661 Mbyte
Operating systems		
Runs under operating system		
• Windows 7	Yes; Professional, Enterprise, Ultimate (32 bit and 64 bit); Windows Embedded Standard 7 with delivery image of the SIMATIC IPC	No
• Windows 10	Yes; Windows 10 Enterprise 2016 LTSB, 64-bit, MUI on IPC2x7E, IPC4x7E, IPC6x7D, IPC8x7D; Windows 10 Enterprise 2019 LTSC 64-bit, MUI on IPC2x7E, IPC4x7E, IPC6x7E, IPC8x7E	Yes; Windows 10 Enterprise 2019 LTSC and 2021 LTSC, 64-bit, MUI
Configuration		
Configuration/programming		
Programming language		
- LAD	Yes	Yes
- FBD	Yes	Yes
- STL	Yes	Yes
- SCL	Yes	Yes
- CFC	No	Yes
- GRAPH	Yes	Yes
Know-how protection		
• User program protection/ password protection	Yes	Yes
• Copy protection	Yes	Yes
• Block protection	Yes	Yes
Access protection		
• protection of confidential configuration data		Yes
• Protection level: Write protection	Yes	Yes
• Protection level: Read/write protection	Yes	Yes
• Protection level: Complete protection	Yes	Yes
• User administration		Yes
• Number of users		100
Open Development interfaces		
• Size of ODK SO file, max.	9.8 Mbyte	9.8 Mbyte

CPU 1508S Linux

Overview



- The SIMATIC S7-1500 Software Controller with Linux (Industrial OS 3.2.4 or higher) as operating system, for implementing the functions of a SIMATIC S7-1500 controller on SIMATIC IPC
- For use with control applications with increased requirements for program and data memory
- For use as a PC-based controller in machines with distributed I/O via PROFINET
- For utilizing IPC onboard interfaces and PC plug-in cards for PROFINET connections
- Optimized for PC-based control tasks with the IPC627E Box PC, the IPC677E Panel PC, and the IPC647E and IPC847E Rack PCs
- Execution of functions and algorithms implemented with high-level languages (C++, Python) on Linux (Industrial OS 3.2.4 or higher) using the Realtime Information Backbone (RIB)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes as well as synchronous operation, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes (motion control functionalities require PROFINET IRT capability via CP 1625 and a PCIe slot on the IPC)
- OPC UA server (data access) and client as Runtime option for easy connection of the SIMATIC S7-1500 Software Controller to Linux applications or third-party devices/systems

New with V30.1, General Sales Release Linux (Industrial OS 3.2.4 or higher)

- Support for the current IPC generation SIMATIC IPC427E, IPC477E as well as SIMATIC IPC BX-39A and PX-39A
- Support of UEFI boot and M.2 SSD on all IPC platforms
- Improved commissioning:
  The resource allocation for the SIMATIC S7-1500 Software Controller, e.g. the interfaces used for PROFINET, is now set using a separate tool and no longer with the two-stage download from STEP 7. This permits a flexible choice of IPC without modifying the STEP 7 project
- Communication between Linux applications and the SIMATIC S7-1500 Software Controller is achieved via pure TCP/IP links. Communication with the SIMATIC S7-1500 Software Controller is possible directly through the PC interfaces on the Linux side ("bridging")
- No direct support from PROFIBUS, PROFIBUS support is only possible with an additional plug-in card
- In order to use the SIMATIC S7-1500 Software Controller V30.1 instead of a previous version (e.g. V21.9), changes in configuration and installation are required.

Ordering data

	Article No.
SIMATIC S7-1500 Software Controller CPU 1508S For implementing the function of a SIMATIC S7-1500 Controller on a SIMATIC IPC with Linux as operating system (Industrial OS 3.2.4 or higher) **Target system:** Optimized for PC-based control tasks with: IPC677E Panel PC, IPC627E Box PC, IPC647E Rack PC, IPC847E Rack PC; Can also be used with: IPC477E Panel PC, IPC PX-39A Panel PC, IPC427E Box PC, IPC BX-39A Box PC; **Requirement:** Linux (Industrial OS 3.2.4 or higher) with UEFI boot; **Type of delivery:** en, de, fr, es, it, zh	
• Version V30.1 for Linux; Single license for one installation; software download including license key [1]	**6ES7672-8AD02-0YG0**
Accessories	
SIMATIC IPC	
• SIMATIC IPC627E Box PC	**6AG4131-3....-....**
• SIMATIC IPC677E Panel PC	**6AV7261-.....-....**
• SIMATIC IPC427E Microbox PC	**6AG4141-.....-....**
• SIMATIC IPC477E Panel PC	**6AV7241-.....-....**
• SIMATIC IPC BX-39A Microbox PC	**6AG4142-.....-....**
• SIMATIC IPC PX-39A Panel PC	**6AV7242-.....-....**
• SIMATIC IPC647E Rack PC	**6AG4112-3....-....**
• SIMATIC IPC847E Rack PC	**6AG4114-3....-....**
For more information, see Catalog ST 80 / ST PC	

CPU 1508S Linux

Ordering data

	Article No.
CP 1625 communications processor PCI Express x1 card for connecting PROFINET with IRT to the SIMATIC S7-1500 Software Controller	**6ES7648-2CF10-1AA0**
CP 5622 communications processor PCI Express x1 card (32-bit) for connecting a programming device or PC to PROFIBUS (can only be used with version V21.9)	**6GK1562-2AA00**
CP 5623 communications processor PCI Express x1 card (32-bit) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master or DP device, incl. PG and FDL protocols; single license for 1 installation, Runtime software, software and electronic manual on CD-ROM, Conformance Class A; for operating system support see SIMATIC NET software; en/de (can only be used with version V21.9)	**6GK1562-3AA00**

[1] Up-to-date information and download availability can be found at http://www.siemens.com/tia-online-software-delivery.

Technical specifications

Article number	**6ES7672-8AD02-0YG0** SIMATIC Software Controller CPU 1508S DL
General information	
Product type designation	CPU 1508S
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V20
Memory	
Work memory	
• integrated (for program)	10 Mbyte
• integrated (for data)	100 Mbyte
• integrated (for CPU function library of CPU Runtime)	50 Mbyte
Load memory	
• integrated (on PC mass storage)	1 024 Mbyte
CPU processing times	
for bit operations, typ.	1 ns; On IPC427E, Intel Xeon processor
for word operations, typ.	2 ns; On IPC427E, Intel Xeon processor
for fixed point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor
for floating point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)

Article number	**6ES7672-8AD02-0YG0** SIMATIC Software Controller CPU 1508S DL
Data areas and their retentivity	
Flag	
• Size, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte
• Outputs	32 kbyte
Time of day	
Clock	
• Type	Software clock, synchronizable, no battery backup
Interfaces	
Number of interfaces	3
1. Interface	
Interface type	CP 1625
Number of connections	192
Interface types	
• RJ 45 (Ethernet)	Yes
- Transmission rate, max.	100 Mbit/s
- Industrial Ethernet status LED	Yes
• Number of ports	2
• integrated switch	Yes
Protocols	
• IP protocol	Yes; IPv4
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes; Optionally also encrypted
• Web server	Yes
• Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0

Technical specifications

Article number	**6ES7672-8AD02-0YG0** SIMATIC Software Controller CPU 1508S DL
PROFINET IO Controller	
Services	
- Isochronous mode	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- shortest clock pulse	500 µs
- IRT	Yes
- PROFIenergy	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625
- Number of connectable IO Devices, max.	256; the maximal amount of supported devices on all interfaces (PN/PB) is 384 (256+128) in total; theoretically it should be 509 (256+128+125), but it is accepted to be limited to 384
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	256
- of which in line, max.	256
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8
- IO Devices changing during operation (partner ports), supported	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1
Address area	
- Inputs, max.	16 kbyte
- Outputs, max.	16 kbyte
PROFINET IO Device	
Services	
- PG/OP communication	Yes
- Isochronous mode	No
- IRT	Yes
- PROFIenergy	Yes
- Prioritized startup	Yes
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
- Asset management record	Yes
- PROFINET Security Class	SNMP Configuration and DCP Read Only

Article number	**6ES7672-8AD02-0YG0** SIMATIC Software Controller CPU 1508S DL
2. Interface	
Interface type	Onboard PROFINET / IE interface X2 of the SIMATIC IPC, Intel Springville i210T
Number of connections	192
Interface types	
• RJ 45 (Ethernet)	Yes
- Transmission rate, max.	100 Mbit/s
- Industrial Ethernet status LED	Yes
• Number of ports	1
• integrated switch	No
Protocols	
• IP protocol	Yes; IPv4
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• PROFIBUS DP master	No
• PROFIBUS DP device	No
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	No
PROFIBUS DP master	
• max. number of DP devices	Profibus interface is not available.
Services	
- Equidistance	No
- Isochronous mode	No
PROFINET IO Controller	
Services	
- Isochronous mode	No
- IRT	No
- PROFIenergy	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Number of connectable IO Devices for RT, max.	128; the maximal amount of supported devices on all interfaces (PN/PB) is 384 (256+128) in total; theoretically it should be 509 (256+128+125), but it is accepted to be limited to 384
- of which in line, max.	128
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1
Address area	
- Inputs, max.	8 kbyte
- Outputs, max.	8 kbyte

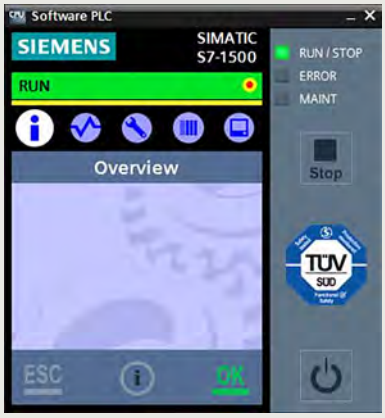
Technical specifications

Article number	**6ES7672-8AD02-0YG0** SIMATIC Software Controller CPU 1508S DL
PROFINET IO Device	
Services	
- Isochronous mode	No
- IRT	No
- PROFIenergy	Yes
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
- Asset management record	Yes
- PROFINET Security Class	SNMP Configuration and DCP Read Only
Protocols	
Number of connections	
• Number of connections, max.	192
Redundancy mode	
Media redundancy	
- MRP	Yes
- MRPD	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50
SIMATIC communication	
• S7 routing	Yes
OPC UA	
• OPC UA Client	Yes; Data access (read, write), method call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space
Supported technology objects	
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
• Number of available Motion Control resources for technology objects	4 800
• Required Motion Control resources	
- per speed-controlled axis	40
- per positioning axis	80
- per synchronous axis	160
- per external encoder	80
- per output cam	20
- per cam track	160
- per probe	40
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes

Article number	**6ES7672-8AD02-0YG0** SIMATIC Software Controller CPU 1508S DL
Hardware requirement	
Hardware required	SIMATIC IPC427E, IPC477E (Pro), IPC BX-39A, IPC PX-39A (Pro)
Processor	
• Single-core processor	No
• Single-core processor with hyper-threading	No
• Multi-core processor	Yes
• Multi-core processor with hyper-threading	Yes
• occupied cores	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S
Memory	
• Work memory, min.	8 Gbyte
• Hard disk memory required for installation	3 Gbyte
• Temporary hard disk memory for installation	300 Mbyte
• Hard disk memory required at runtime	1 700 Mbyte
Configuration	
Configuration/programming	
Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes
- CFC	Yes
- GRAPH	Yes
Know-how protection	
• User program protection/ password protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• protection of confidential configuration data	Yes
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
• User administration	Yes
• Number of users	100
Open Development interfaces	
• Size of ODK SO file, max.	9.8 Mbyte

CPU 1507S F Windows

Overview



- SIMATIC S7-1500 Software Controller with Windows as operating system for implementing the functions of a SIMATIC S7-1500 Controller on a SIMATIC IPC
- For use as a PC-based controller in machines with distributed I/O via PROFINET
- For utilizing IPC onboard interfaces and PC plug-in cards for PROFINET connections
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- Supports PROFIsafe in distributed configurations
- Can also be used on the IPC227G, IPC427E and IPC627E Box PCs, the IPC277G, IPC477E and IPC677E Panel PCs, and the IPC647E and IPC847E Rack PCs
- Execution of functions and algorithms implemented with high-level languages under Windows (C/C++, C#, VB) and locally in the CPU 1507S F (C/C++)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes as well as synchronous operation, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes (motion control functionalities require PROFINET IRT capability via CP 1625 and a PCIe slot on the IPC)
- Integrated web server for diagnostics with the option of creating user-defined web pages
- OPC UA server (data access) and client as Runtime option for easy connection of the SIMATIC S7-1500 Software Controller to Windows applications or non-Siemens devices/systems

New in version V30.1

- Support for new IPC generations
- Optimized for PC-based control tasks with the IPC BX-39A Microbox PC and the IPC PX-39A (Pro) Panel PC
- Support for the current IPC generation SIMATIC IPC227G and IPC277G
- Can also be used on the IPC427E and IPC627E Box PCs, the IPC477E (Pro) and IPC677E Panel PCs, and the IPC647E and IPC847E Rack PCs
- Support of UEFI boot and M.2 SSD on all IPC platforms
- Improved commissioning:
  The resource allocation for the SIMATIC S7-1500 Software Controller, e.g. the interfaces used for PROFINET, is now set using a separate tool and no longer with the two-stage download from STEP 7. This permits a flexible choice of IPC without modifying the STEP 7 project
- Communication between Windows applications and the SIMATIC S7-1500 Software Controller is achieved via pure TCP/IP links. Communication with the SIMATIC S7-1500 Software Controller is possible directly through the PC interfaces on the Windows side ("bridging")
- Safety functions possible on IPC without NVRAM
- No direct support from PROFIBUS, PROFIBUS support is only possible with an additional plug-in card.
- In order to use the SIMATIC S7-1500 Software Controller V30.1 instead of a previous version (e.g. V21.9), changes in the configuration and installation are required.

CPU 1507S F Windows

Ordering data	Article No.
SIMATIC S7-1500 Software Controller CPU 1507S F For implementing the function of a fail-safe S7-1500 Controller on SIMATIC IPCs **Target system:** Optimized for PC-based control tasks with IPC BX-39A Microbox PC and IPC PX-39A (Pro) Panel PC; Can also be used with IPC277G (Pro) Panel PC, IPC477E (Pro) Panel PC, IPC677E Panel PC, IPC227G Box PC, IPC427E Box PC, IPC627E Box PC, IPC647E Rack PC, IPC847E Rack PC. **Requirement:** Windows 10 (64-bit) with UEFI boot; For supported Windows 10 versions, see Technical specifications; For optimum fail-safe operation, IPC configurations with NVRAM are recommended (requirement for use of version V21.9). **Type of delivery:** en, de, fr, es, it, zh	
• Version V30.1 for Windows; Single license for one installation Software on DVD, license key on USB flash drive	**6ES7672-7FC02-0YA0**
• Version V30.1 for Windows; Single license for one installation; Software download including license key [1]	**6ES7672-7FC02-0YG0**
• Version V30.1 for Windows; Upgrade license for one installation. For upgrading existing installations with CPU 1507S F Version 2; Software download including license key [1]	**6ES7672-7FC02-0YK0**
• Version V21.9; Single license for one installation Software on DVD, license key on USB flash drive; Note: for safety functions, IPC with NVRAM are absolutely necessary	**6ES7672-7FC01-0YA0**
• Version V21.9; Single license for one installation; Software download including license key [1] Note: for safety functions, IPC with NVRAM are absolutely necessary	**6ES7672-7FC01-0YG0**

Accessories	Article No.
SIMATIC IPC	
• SIMATIC IPC BX-39A Microbox PC	**6AG4142-.....-....**
• SIMATIC IPC PX-39A Panel PC	**6AV7242-.....-....**
• SIMATIC IPC PX-39A Pro Panel PC	**6AV7252-.....-....**
• SIMATIC IPC227G Nanobox PC	**6ES7647-8C...-....**
• SIMATIC IPC277G Panel PC	**6AV7886-0....-....**
• SIMATIC IPC277G Pro Panel PC	**6AV7886-1....-....**
• SIMATIC IPC427E Microbox PC	**6AG4141-.....-....**
• SIMATIC IPC477E Panel PC	**6AV7241-.....-....**
• SIMATIC IPC477E Pro Panel PC	**6AV7251-.....-....**
• SIMATIC IPC627E Box PC	**6AG4131-3....-....**
• SIMATIC IPC677E Panel PC	**6AV7261-.....-....**
• IPC647E Rack PC	**6AG4112-3....-....**
• IPC847E Rack PC	**6AG4114-3....-....**
CP 1625 communications processor PCI Express x1 card for connecting PROFINET with IRT to the SIMATIC S7-1500 Software Controller	**6ES7648-2CF10-1AA0**
CP 5622 communications processor PCI Express x1 card (32-bit) for connecting a programming device or PC to PROFIBUS (can only be used with version V21.9)	**6GK1562-2AA00**
CP 5623 communications processor PCI Express x1 card (32-bit) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master or DP device, incl. PG and FDL protocols; single license for 1 installation, Runtime software, software and electronic manual on CD-ROM, Conformance Class A; for operating system support see SIMATIC NET software; en/de (can only be used with version V21.9)	**6GK1562-3AA00**

[1] Up-to-date information and download availability can be found at http://www.siemens.com/tia-online-software-delivery.

8

CPU 1507S F Windows

Technical specifications

Article number	**6ES7672-7FC01-0YA0** SIMATIC Failsafe SW Ctrl CPU 1507S F	**6ES7672-7FC02-0YA0** SIMATIC Failsafe SW Ctrl CPU 1507S F
General information		
Product type designation	CPU 1507S F	CPU 1507S F
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V17	V20
Memory		
Work memory		
• integrated (for program)	7.5 Mbyte	7.5 Mbyte
• integrated (for data)	20 Mbyte	20 Mbyte
• integrated (for CPU function library of CPU Runtime)	50 Mbyte	50 Mbyte
Load memory		
• integrated (on PC mass storage)	320 Mbyte	320 Mbyte
CPU processing times		
for bit operations, typ.	1 ns; On IPC427E, Intel Xeon processor	1 ns; On IPC427E, Intel Xeon processor
for word operations, typ.	2 ns; On IPC427E, Intel Xeon processor	2 ns; On IPC427E, Intel Xeon processor
for fixed point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor	2 ns; On IPC427E, Intel Xeon processor
for floating point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor	2 ns; On IPC427E, Intel Xeon processor
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times		
• Number	2 048	2 048
IEC timer		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity		
Flag		
• Size, max.	16 kbyte	16 kbyte
Address area		
I/O address area		
• Inputs	32 kbyte	32 kbyte
• Outputs	32 kbyte	32 kbyte
Time of day		
Clock		
• Type	Software clock, synchronizable, no battery backup	Software clock, synchronizable, no battery backup
Interfaces		
Number of interfaces	3	3
1. Interface		
Interface type	CP 1625	CP 1625
Number of connections	128	128
Interface types		
• RJ 45 (Ethernet)	Yes	Yes
- Transmission rate, max.	100 Mbit/s	100 Mbit/s
- Industrial Ethernet status LED	Yes	Yes
• Number of ports	2	2
• integrated switch	Yes	Yes
Protocols		
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy		Yes; MRP Automanager according to IEC 62439-2 Edition 2.0

CPU 1507S F Windows

Technical specifications

Article number	**6ES7672-7FC01-0YA0**	**6ES7672-7FC02-0YA0**
	SIMATIC Failsafe SW Ctrl CPU 1507S F	SIMATIC Failsafe SW Ctrl CPU 1507S F
PROFINET IO Controller		
Services		
- Isochronous mode	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- shortest clock pulse	500 µs	500 µs
- IRT	Yes	Yes
- PROFIenergy	Yes	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625
- Number of connectable IO Devices, max.	256	256
- Of which IO devices with IRT, max.	64	64
- Number of connectable IO Devices for RT, max.	256	256
- of which in line, max.	256	256
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8	8
- IO Devices changing during operation (partner ports), supported	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class		1
Address area		
- Inputs, max.	8 kbyte	8 kbyte
- Outputs, max.	8 kbyte	8 kbyte
PROFINET IO Device		
Services		
- PG/OP communication	Yes	Yes
- Isochronous mode	No	No
- IRT	Yes	Yes
- PROFIenergy	Yes	Yes
- Prioritized startup	Yes; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)	Yes; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- Asset management record	Yes	Yes
- PROFINET Security Class		SNMP Configuration and DCP Read Only
2. Interface		
Interface type	Onboard PROFINET / IE interface X2/X3 of the SIMATIC IPC, Intel Springville i210T	Onboard PROFINET / IE interface X2/X3 of the SIMATIC IPC, Intel Springville i210T
Number of connections	128	128
Interface types		
• RJ 45 (Ethernet)	Yes	Yes
- Transmission rate, max.	100 Mbit/s	100 Mbit/s
- Industrial Ethernet status LED	Yes	Yes
• Number of ports	1	1
• integrated switch	No	No

CPU 1507S F Windows

Technical specifications

Article number	**6ES7672-7FC01-0YA0**	**6ES7672-7FC02-0YA0**
	SIMATIC Failsafe SW Ctrl CPU 1507S F	SIMATIC Failsafe SW Ctrl CPU 1507S F
Protocols		
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• PROFIBUS DP master		No
• PROFIBUS DP device		No
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes	Yes
• Web server	Yes	Yes
• Media redundancy	No	No
PROFINET IO Controller		
Services		
- Isochronous mode	No	No
- IRT	No	No
- PROFIenergy	Yes	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Number of connectable IO Devices for RT, max.	128	128
- of which in line, max.	128	128
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8	8
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class		1
Address area		
- Inputs, max.	8 kbyte	8 kbyte
- Outputs, max.	8 kbyte	8 kbyte
PROFINET IO Device		
Services		
- Isochronous mode	No	No
- IRT	No	No
- PROFIenergy	Yes	Yes
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- Asset management record	Yes	Yes
3. Interface		
Interface type	PROFIBUS with CP 5622, CP 5622 onboard	
Number of connections	44	
Interface types		
• RS 485	Yes	
Protocols		
• PROFIBUS DP master	Yes	
• PROFIBUS DP device	No	
• SIMATIC communication	Yes; no PG/STEP 7 connection possible	
PROFIBUS DP master		
• max. number of DP devices	64	
Services		
- Equidistance	No	
- Isochronous mode	No	
Address area		
- Inputs, max.	8 kbyte	
- Outputs, max.	8 kbyte	

CPU 1507S F Windows

Technical specifications

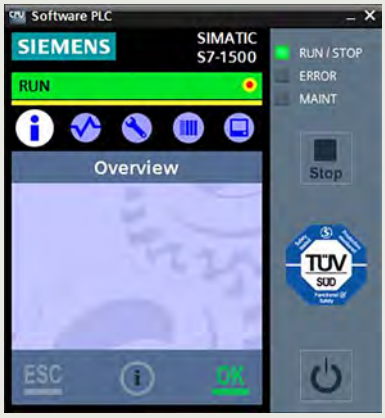
Article number	**6ES7672-7FC01-0YA0** SIMATIC Failsafe SW Ctrl CPU 1507S F	**6ES7672-7FC02-0YA0** SIMATIC Failsafe SW Ctrl CPU 1507S F
4. Interface		
Interface type	PROFIBUS with CP 5623	
Number of connections	44	
Interface types		
• RS 485	Yes	
Protocols		
• PROFIBUS DP master	Yes	
• PROFIBUS DP device	No	
• SIMATIC communication	Yes; no PG/STEP 7 connection possible	
PROFIBUS DP master		
• max. number of DP devices	125	
Protocols		
Number of connections		
• Number of connections, max.	128	128
Redundancy mode		
Media redundancy		
- MRP	Yes	Yes
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50
SIMATIC communication		
• S7 routing	Yes	Yes; not via Windows interfaces
OPC UA		
• OPC UA Client	Yes; Data access (read, write), method call	Yes; Data access (read, write), method call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space	Yes; Data access (read, write, subscribe), method call, custom address space
Supported technology objects		
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
• Number of available Motion Control resources for technology objects	4 800	4 800
• Required Motion Control resources		
- per speed-controlled axis	40	40
- per positioning axis	80	80
- per synchronous axis	160	160
- per external encoder	80	80
- per output cam	20	20
- per cam track	160	160
- per probe	40	40
Controller		
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring		
• High-speed counter	Yes	Yes
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
• Performance level according to ISO 13849-1	PLe	PLe
• SIL acc. to IEC 61508	SIL 3	SIL 3
Probability of failure (for service life of 20 years and repair time of 100 hours)		
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09	< 1.00E-09

CPU 1507S F Windows

Technical specifications

Article number	**6ES7672-7FC01-0YA0** SIMATIC Failsafe SW Ctrl CPU 1507S F	**6ES7672-7FC02-0YA0** SIMATIC Failsafe SW Ctrl CPU 1507S F
Hardware requirement		
Hardware required	SIMATIC IPC2x7E, IPC4x7D/E, IPC627D, IPC677D, IPC827D: configurations with NVRAM required; IPC6x7E, IPC8x7E	SIMATIC IPC227G, IPC277G (Pro), IPC427E, IPC477E (Pro), IPC BX-39A, IPC PX-39A (Pro), IPC627E, IPC677E, IPC647E, IPC847E
Processor		
• Single-core processor	No	No
• Single-core processor with hyper-threading	No	No
• Multi-core processor	Yes	Yes
• Multi-core processor with hyper-threading	Yes	Yes
• occupied cores	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S
Memory		
• Work memory, min.	4 Gbyte	8 Gbyte
• Hard disk memory required for installation	720 Mbyte	720 Mbyte
• Temporary hard disk memory for installation	230 Mbyte	230 Mbyte
• Hard disk memory required at runtime	400 Mbyte	561 Mbyte
Operating systems		
Runs under operating system		
• Windows 7	Yes; Professional, Enterprise, Ultimate (32 bit and 64 bit); Windows Embedded Standard 7 with delivery image of the SIMATIC IPC	No
• Windows 10	Yes; Windows 10 Enterprise 2016 LTSB, 64-bit, MUI on IPC2x7E, IPC4x7E, IPC6x7D, IPC8x7D; Windows 10 Enterprise 2019 LTSC 64-bit, MUI on IPC2x7E, IPC4x7E, IPC6x7E, IPC8x7E	Yes; Windows 10 Enterprise 2019 LTSC and 2021 LTSC, 64-bit, MUI
Configuration		
Configuration/programming		
Programming language		
- LAD	Yes; incl. failsafe	Yes; incl. failsafe
- FBD	Yes; incl. failsafe	Yes; incl. failsafe
- STL	Yes	Yes
- SCL	Yes	Yes
- CFC	No	Yes
- GRAPH	Yes	Yes
Know-how protection		
• User program protection/ password protection	Yes	Yes
• Copy protection	Yes	Yes
• Block protection	Yes	Yes
Access protection		
• protection of confidential configuration data		Yes
• Protection level: Write protection	Yes	Yes
• Protection level: Read/write protection	Yes	Yes
• Protection level: Write protection for Failsafe	Yes	Yes
• Protection level: Complete protection	Yes	Yes
• User administration		Yes
• Number of users		100
Open Development interfaces		
• Size of ODK SO file, max.	9.8 Mbyte	9.8 Mbyte

Overview



- SIMATIC S7-1500 Software Controller V30.1 with Linux (Industrial OS 3.2.4 or higher) as operating system for implementing the functions of a SIMATIC S7-1500 Controller on SIMATIC IPC
- Use as a PC-based SIMATIC controller in machines with distributed I/O via PROFINET
- For utilizing IPC onboard interfaces and PC plug-in cards for PROFINET connections
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- Supports PROFIsafe in distributed configurations
- Can also be used on the IPC227G, IPC427E and IPC627E Box PCs, the IPC277G, IPC477E and IPC677E Panel PCs, and the IPC647E and IPC847E Rack PCs
- Execution of functions and algorithms implemented with high-level languages (C++/Python) on Linux (Industrial OS 3.2.4 or higher) using the Realtime Information Backbone (RIB)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes as well as synchronous operation, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes (motion control functionalities require PROFINET IRT capability via CP 1625 and a PCIe slot on the IPC)
- Integrated web server for diagnostics with the option of creating user-defined web pages
- OPC UA server (data access) and client as Runtime option for easy connection of the SIMATIC S7-1500 Software Controller to Linux applications or third-party devices/systems

New in version V30.1: General Sales Release Linux (Industrial OS 3.2.4 or higher)

- Support for new IPC generations
- Optimized for PC-based control tasks with the IPC BX-39A Microbox PC and the IPC PX-39A (Pro) Panel PC
- Support for the current IPC generation SIMATIC IPC227G and IPC277G
- Can also be used on the IPC427E and IPC627E Box PCs, the IPC477E (Pro) and IPC677E Panel PCs, and the IPC647E and IPC847E Rack PCs
- Support of UEFI boot and M.2 SSD on all IPC platforms
- Improved commissioning:
  The resource allocation for the SIMATIC S7-1500 Software Controller, e.g. the interfaces used for PROFINET, is now set using a separate tool and no longer with the two-stage download from STEP 7. This permits a flexible choice of IPC without modifying the STEP 7 project
- Communication between Linux applications and the SIMATIC S7-1500 Software Controller is achieved via pure TCP/IP links. Communication with the SIMATIC S7-1500 Software Controller is possible directly through the PC interfaces on the Linux side ("bridging")
- Safety functions possible on IPC without NVRAM
- No direct support from PROFIBUS, PROFIBUS support is only possible with an additional plug-in card.
- In order to use the SIMATIC S7-1500 Software Controller V30.1 instead of a previous version (e.g. V21.9), changes in the configuration and installation are required.

CPU 1507S F Linux

Ordering data

	Article No.
SIMATIC S7-1500 Software Controller CPU 1507S F For implementing the function of a fail-safe S7-1500 Controller on SIMATIC IPCs with Linux as operating system (Industrial OS 3.2.4 or higher) **Target system:** Optimized for PC-based control tasks with IPC BX-39A Microbox PC and IPC PX-39A (Pro) Panel PC; Can also be used with IPC277G (Pro) Panel PC, IPC477E (Pro) Panel PC, IPC677E Panel PC, IPC227G Box PC, IPC427E Box PC, IPC627E Box PC, IPC647E Rack PC, IPC847E Rack PC. **Requirement:** Linux (Industrial OS 3.2.4 or higher) with UEFI boot; For supported Linux versions, see Technical specifications; For optimal fail-safe operation, IPC configurations with NVRAM are recommended **Type of delivery:** en, de, fr, es, it, zh	
• Version V30.1 for Linux; Single license for one installation; software download including license key [1]	**6ES7672-7FD02-0YG0**

Accessories	Article No.
SIMATIC IPC	
• SIMATIC IPC BX-39A Microbox PC	**6AG4142-.....-....**
• SIMATIC IPC PX-39A Panel PC	**6AV7242-.....-....**
• SIMATIC IPC PX-39A Pro Panel PC	**6AV7252-.....-....**
• SIMATIC IPC227G Nanobox PC	**6ES7647-8C...-....**
• SIMATIC IPC277G Panel PC	**6AV7886-0....-....**
• SIMATIC IPC277G Pro Panel PC	**6AV7886-1....-....**
• SIMATIC IPC427E Microbox PC	**6AG4141-.....-....**
• SIMATIC IPC477E Panel PC	**6AV7241-.....-....**
• SIMATIC IPC477E Pro Panel PC	**6AV7251-.....-....**
• SIMATIC IPC627E Box PC	**6AG4131-3....-....**
• SIMATIC IPC677E Panel PC	**6AV7261-.....-....**
• IPC647E Rack PC	**6AG4112-3....-....**
• IPC847E Rack PC	**6AG4114-3....-....**
CP 1625 communications processor PCI Express x1 card for connecting PROFINET with IRT to the SIMATIC S7-1500 Software Controller	**6ES7648-2CF10-1AA0**
CP 5622 communications processor PCI Express x1 card (32-bit) for connecting a programming device or PC to PROFIBUS (can only be used with version V21.9)	**6GK1562-2AA00**
CP 5623 communications processor PCI Express x1 card (32-bit) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master or DP device, incl. PG and FDL protocols; single license for 1 installation, Runtime software, software and electronic manual on CD-ROM, Conformance Class A; for operating system support see SIMATIC NET software; en/de (can only be used with version V21.9)	**6GK1562-3AA00**

[1] Up-to-date information and download availability can be found at http://www.siemens.com/tia-online-software-delivery.

Technical specifications

Article number	**6ES7672-7FD02-0YG0** SIMATIC SW Ctrl CPU 1507S F Linux DL
General information	
Product type designation	CPU 1507S F
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V20
Memory	
Work memory	
• integrated (for program)	7.5 Mbyte
• integrated (for data)	20 Mbyte
• integrated (for CPU function library of CPU Runtime)	50 Mbyte
Load memory	
• integrated (on PC mass storage)	320 Mbyte
CPU processing times	
for bit operations, typ.	1 ns; On IPC427E, Intel Xeon processor
for word operations, typ.	2 ns; On IPC427E, Intel Xeon processor
for fixed point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor
for floating point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Size, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte
• Outputs	32 kbyte

Technical specifications

Article number	**6ES7672-7FD02-0YG0** SIMATIC SW Ctrl CPU 1507S F Linux DL
Time of day	
Clock	
• Type	Software clock, synchronizable, no battery backup
Interfaces	
Number of interfaces	3
1. Interface	
Interface type	CP 1625
Number of connections	128
Interface types	
• RJ 45 (Ethernet)	Yes
- Transmission rate, max.	100 Mbit/s
- Industrial Ethernet status LED	Yes
• Number of ports	2
• integrated switch	Yes
Protocols	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes; Optionally also encrypted
• Web server	Yes
• Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
PROFINET IO Controller	
Services	
- Isochronous mode	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- shortest clock pulse	500 µs
- IRT	Yes
- PROFIenergy	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625
- Number of connectable IO Devices, max.	256
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	256
- of which in line, max.	256
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8
- IO Devices changing during operation (partner ports), supported	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1
Address area	
- Inputs, max.	8 kbyte
- Outputs, max.	8 kbyte

Article number	**6ES7672-7FD02-0YG0** SIMATIC SW Ctrl CPU 1507S F Linux DL
PROFINET IO Device	
Services	
- PG/OP communication	Yes
- Isochronous mode	No
- IRT	Yes
- PROFIenergy	Yes
- Prioritized startup	Yes; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
- Asset management record	Yes
- PROFINET Security Class	SNMP Configuration and DCP Read Only
2. Interface	
Interface type	Onboard PROFINET / IE interface X2/X3 of the SIMATIC IPC, Intel Springville i210T
Number of connections	128
Interface types	
• RJ 45 (Ethernet)	Yes
- Transmission rate, max.	100 Mbit/s
- Industrial Ethernet status LED	Yes
• Number of ports	1
• integrated switch	No
Protocols	
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• PROFIBUS DP master	No
• PROFIBUS DP device	No
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	No
PROFIBUS DP master	
• max. number of DP devices	Profibus interface is not available.
Services	
- Equidistance	No
- Isochronous mode	No

Technical specifications

Article number	**6ES7672-7FD02-0YG0** SIMATIC SW Ctrl CPU 1507S F Linux DL
PROFINET IO Controller	
Services	
- Isochronous mode	No
- IRT	No
- PROFIenergy	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Number of connectable IO Devices for RT, max.	128
- of which in line, max.	128
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1
Address area	
- Inputs, max.	8 kbyte
- Outputs, max.	8 kbyte
PROFINET IO Device	
Services	
- Isochronous mode	No
- IRT	No
- PROFIenergy	Yes
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
- Asset management record	Yes
- PROFINET Security Class	SNMP Configuration and DCP Read Only
Protocols	
Number of connections	
• Number of connections, max.	128
Redundancy mode	
Media redundancy	
- MRP	Yes
- MRPD	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50
SIMATIC communication	
• S7 routing	Yes; not via Linux interfaces
OPC UA	
• OPC UA Client	Yes; Data access (read, write), method call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space

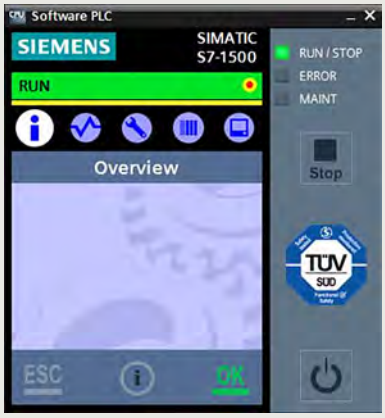
Article number	**6ES7672-7FD02-0YG0** SIMATIC SW Ctrl CPU 1507S F Linux DL
Supported technology objects	
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
• Number of available Motion Control resources for technology objects	4 800
• Required Motion Control resources	
- per speed-controlled axis	40
- per positioning axis	80
- per synchronous axis	160
- per external encoder	80
- per output cam	20
- per cam track	160
- per probe	40
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	PLe
• SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repair time of 100 hours)	
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09
Hardware requirement	
Hardware required	SIMATIC IPC227G, IPC277G (Pro), IPC427E, IPC477E (Pro), IPC BX-39A, IPC PX-39A (Pro)
Processor	
• Single-core processor	No
• Single-core processor with hyper-threading	No
• Multi-core processor	Yes
• Multi-core processor with hyper-threading	Yes
• occupied cores	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S
Memory	
• Work memory, min.	8 Gbyte
• Hard disk memory required for installation	3 Gbyte
• Temporary hard disk memory for installation	300 Mbyte
• Hard disk memory required at runtime	1 700 Mbyte

Technical specifications

Article number	**6ES7672-7FD02-0YG0** SIMATIC SW Ctrl CPU 1507S F Linux DL
Configuration	
Configuration/programming	
Programming language	
- LAD	Yes; incl. failsafe
- FBD	Yes; incl. failsafe
- STL	Yes
- SCL	Yes
- CFC	Yes
- GRAPH	Yes
Know-how protection	
• User program protection/ password protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Write protection for Failsafe	Yes
• Protection level: Complete protection	Yes
• User administration	Yes
• Number of users	100
Open Development interfaces	
• Size of ODK SO file, max.	9.8 Mbyte

CPU 1508S F Windows

Overview



- SIMATIC S7-1500 Software Controller with Windows as operating system for implementing the functions of a SIMATIC S7-1500 Controller on a SIMATIC IPC
- For use with control applications with increased requirements for program and data memory
- For use as a PC-based controller in machines with distributed I/O via PROFINET
- For utilizing IPC onboard interfaces and PC plug-in cards for PROFINET connections
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- Supports PROFIsafe in distributed configurations
- Optimized for PC-based control tasks with the IPC627E Box PC, the IPC677E Panel PC, and the IPC647E and IPC847E Rack PCs
- Execution of functions and algorithms implemented with high-level languages under Windows (C/C++, C#, VB) and locally in the CPU 1508S F (C/C++)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes as well as synchronous operation, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes (motion control functionalities require PROFINET IRT capability via CP 1625 and a PCIe slot on the IPC)
- Integrated web server for diagnostics with the option of creating user-defined web pages
- OPC UA server (data access) and client as Runtime option for easy connection of the SIMATIC S7-1500 Software Controller to Windows applications or non-Siemens devices/systems

New in version V30.1

- Support for the current IPC generation SIMATIC IPC427E, IPC477E as well as SIMATIC IPC BX-39A and PX-39A
- Support of UEFI boot and M.2 SSD on all IPC platforms
- Improved commissioning:
  The resource allocation for the SIMATIC S7-1500 Software Controller, e.g. the interfaces used for PROFINET, is now set using a separate tool and no longer with the two-stage download from STEP 7. This permits a flexible choice of IPC without modifying the STEP 7 project
- Communication between Windows applications and the SIMATIC S7-1500 Software Controller is achieved via pure TCP/IP links. Communication with the SIMATIC S7-1500 Software Controller is possible directly through the PC interfaces on the Windows side ("bridging")
- Safety functions possible on IPC without NVRAM
- No direct support from PROFIBUS, PROFIBUS support is only possible with an additional plug-in card
- In order to use the SIMATIC S7-1500 Software Controller V30.1 instead of a previous version (e.g. V21.9), changes in the configuration and installation are required.

CPU 1508S F Windows

Ordering data	Article No.
SIMATIC S7-1500 Software Controller CPU 1508S F For implementing the function of a fail-safe S7-1500 Controller on a SIMATIC IPC **Target system:** Optimized for PC-based control tasks with: IPC677E Panel PC, IPC627E Box PC, IPC647E Rack PC, IPC847E Rack PC; Can also be used with: IPC477E Panel PC, IPC PX-39A Panel PC, IPC427E Box PC, IPC BX-39A Box PC; **Requirement:** Windows 10 (64-bit) with UEFI boot; for supported Windows 10 versions, see Technical specifications. For optimum fail-safe operation, IPC configurations with NVRAM are recommended (requirement for use of version V21.9). **Type of delivery:** en, de, fr, es, it, zh	
• Version V30.1 for Windows; Single license for one installation Software on DVD, license key on USB flash drive	**6ES7672-8FC02-0YA0**
• Version V30.1 for Windows; Single license for one installation; Software download including license key [1]	**6ES7672-8FC02-0YG0**
• Version V30.1 for Windows; Upgrade license for one installation For upgrading existing installations with CPU 1508S F Version 2 Software download including license key [1]	**6ES7672-8FC02-0YK0**
• Version V29.1 for Windows; Single license for one installation Software and documentation on DVD, license key on USB flash drive Note: for safety functions, IPC with NVRAM are absolutely necessary	**6ES7672-8FC01-0YA0**
• Version V29.1 for Windows; Single license for one installation; Software download including license key [1] Note: for safety functions, IPC with NVRAM are absolutely necessary	**6ES7672-8FC01-0YG0**

Accessories	Article No.
SIMATIC IPC	
• SIMATIC IPC627E Box PC	**6AG4131-3....-....**
• SIMATIC IPC677E Panel PC	**6AV7261-.....-....**
• SIMATIC IPC647E Rack PC	**6AG4112-3....-....**
• SIMATIC IPC847E Rack PC	**6AG4114-3....-....**
• SIMATIC IPC427E Microbox PC	**6AG4141-.....-....**
• SIMATIC IPC477E Panel PC	**6AV7241-.....-....**
• SIMATIC IPC BX-39A Microbox PC	**6AG4142-.....-....**
• SIMATIC IPC PX-39A Panel PC	**6AV7242-.....-....**
For more information, see Catalog ST 80 / ST PC	
CP 1625 communications processor PCI Express x1 card for connecting PROFINET with IRT to the SIMATIC S7-1500 Software Controller	**6ES7648-2CF10-1AA0**
CP 5622 communications processor PCI Express x1 card (32-bit) for connecting a programming device or PC to PROFIBUS (can only be used with version V21.9)	**6GK1562-2AA00**
CP 5623 communications processor PCI Express x1 card (32-bit) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master or DP device, incl. PG and FDL protocols; single license for 1 installation, Runtime software, software and electronic manual on CD-ROM, Conformance Class A; for operating system support see SIMATIC NET software; en/de (can only be used with version V21.9)	**6GK1562-3AA00**

[1] Up-to-date information and download availability can be found at http://www.siemens.com/tia-online-software-delivery.

8

CPU 1508S F Windows

Technical specifications

Article number	**6ES7672-8FC01-0YA0** SIMATIC Failsafe SW Ctrl CPU 1508S F	**6ES7672-8FC02-0YA0** SIMATIC Failsafe SW Ctrl CPU 1508S F
General information		
Product type designation	CPU 1508S F	CPU 1508S F
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V17	V20
Memory		
Work memory		
• integrated (for program)	12.5 Mbyte	12.5 Mbyte
• integrated (for data)	100 Mbyte	100 Mbyte
• integrated (for CPU function library of CPU Runtime)	50 Mbyte	50 Mbyte
Load memory		
• integrated (on PC mass storage)	1 024 Mbyte	1 024 Mbyte
CPU processing times		
for bit operations, typ.	1 ns; On IPC427E, Intel Xeon processor	1 ns; On IPC427E, Intel Xeon processor
for word operations, typ.	2 ns; On IPC427E, Intel Xeon processor	2 ns; On IPC427E, Intel Xeon processor
for fixed point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor	2 ns; On IPC427E, Intel Xeon processor
for floating point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor	2 ns; On IPC427E, Intel Xeon processor
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times		
• Number	2 048	2 048
IEC timer		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity		
Flag		
• Size, max.	16 kbyte	16 kbyte
Address area		
I/O address area		
• Inputs	32 kbyte	32 kbyte
• Outputs	32 kbyte	32 kbyte
Time of day		
Clock		
• Type	Software clock, synchronizable, no battery backup	Software clock, synchronizable, no battery backup
Interfaces		
Number of interfaces	3	3
1. Interface		
Interface type	CP 1625	CP 1625
Number of connections	192	192
Interface types		
• RJ 45 (Ethernet)	Yes	Yes
- Transmission rate, max.	100 Mbit/s	100 Mbit/s
- Industrial Ethernet status LED	Yes	Yes
• Number of ports	2	2
• integrated switch	Yes	Yes
Protocols		
• IP protocol		Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy		Yes; MRP Automanager according to IEC 62439-2 Edition 2.0

CPU 1508S F Windows

Technical specifications

Article number	**6ES7672-8FC01-0YA0**	**6ES7672-8FC02-0YA0**
	SIMATIC Failsafe SW Ctrl CPU 1508S F	SIMATIC Failsafe SW Ctrl CPU 1508S F
PROFINET IO Controller		
Services		
- Isochronous mode	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- shortest clock pulse	500 µs	500 µs
- IRT	Yes	Yes
- PROFIenergy	Yes	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625
- Number of connectable IO Devices, max.	256; the maximal amount of supported devices on all interfaces (PN/PB) is 384 in total	256; the maximal amount of supported devices on all interfaces (PN/PB) is 384 (256+128) in total; theoretically it should be 509 (256+128+125), but it is accepted to be limited to 384
- Of which IO devices with IRT, max.	64	64
- Number of connectable IO Devices for RT, max.	256	256
- of which in line, max.	256	256
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8	8
- IO Devices changing during operation (partner ports), supported	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class		1
Address area		
- Inputs, max.	16 kbyte	16 kbyte
- Outputs, max.	16 kbyte	16 kbyte
PROFINET IO Device		
Services		
- Isochronous mode	No	No
- IRT	Yes	Yes
- PROFIenergy	Yes	Yes
- Prioritized startup	Yes	Yes
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- Asset management record	Yes	Yes
- PROFINET Security Class		SNMP Configuration and DCP Read Only
2. Interface		
Interface type	Onboard PROFINET / IE interface X2 of the SIMATIC IPC, Intel Springville i210T	Onboard PROFINET / IE interface X2 of the SIMATIC IPC, Intel Springville i210T
Number of connections	192	192
Interface types		
• RJ 45 (Ethernet)	Yes	Yes
- Transmission rate, max.	100 Mbit/s	100 Mbit/s
• Number of ports	1	1
• integrated switch	No	No

CPU 1508S F Windows

Technical specifications

Article number	**6ES7672-8FC01-0YA0**	**6ES7672-8FC02-0YA0**
	SIMATIC Failsafe SW Ctrl CPU 1508S F	SIMATIC Failsafe SW Ctrl CPU 1508S F
Protocols		
• IP protocol		Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• PROFIBUS DP master		No
• PROFIBUS DP device		No
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes	Yes
• Web server	Yes	Yes
• Media redundancy	No	No
PROFINET IO Controller		
Services		
- Isochronous mode	No	No
- IRT	No	No
- PROFIenergy	Yes	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Number of connectable IO Devices for RT, max.	128; the maximal amount of supported devices on all interfaces (PN/PB) is 384 in total	128; the maximal amount of supported devices on all interfaces (PN/PB) is 384 (256+128) in total; theoretically it should be 509 (256+128+125), but it is accepted to be limited to 384
- of which in line, max.	128	128
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8	8
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class		1
Address area		
- Inputs, max.	8 kbyte	8 kbyte
- Outputs, max.	8 kbyte	8 kbyte
PROFINET IO Device		
Services		
- Isochronous mode	No	No
- IRT	No	No
- PROFIenergy	Yes	Yes
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- Asset management record	Yes	Yes
- PROFINET Security Class		SNMP Configuration and DCP Read Only
3. Interface		
Interface type	PROFIBUS with CP 5622, CP 5622 onboard	
Number of connections	44	
Protocols		
• PROFIBUS DP master	Yes	
• PROFIBUS DP device	No	
• SIMATIC communication	Yes	
PROFIBUS DP master		
• max. number of DP devices	64	
Services		
- Equidistance	No	
- Isochronous mode	No	
Address area		
- Inputs, max.	8 kbyte	
- Outputs, max.	8 kbyte	

CPU 1508S F Windows

Technical specifications

Article number	**6ES7672-8FC01-0YA0**	**6ES7672-8FC02-0YA0**
	SIMATIC Failsafe SW Ctrl CPU 1508S F	SIMATIC Failsafe SW Ctrl CPU 1508S F
4. Interface		
Interface type	PROFIBUS with CP 5623	
Number of connections	44	
Interface types		
• RS 485	Yes	
Protocols		
• PROFIBUS DP master	Yes	
• PROFIBUS DP device	No	
• SIMATIC communication	Yes; no PG/STEP 7 connection possible	
PROFIBUS DP master		
• max. number of DP devices	125	
Protocols		
Number of connections		
• Number of connections, max.	192	192
Redundancy mode		
Media redundancy		
- MRP	Yes	Yes
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50
SIMATIC communication		
• S7 routing	Yes	Yes
OPC UA		
• OPC UA Client	Yes; Data access (read, write), method call	Yes; Data access (read, write), method call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space	Yes; Data access (read, write, subscribe), method call, custom address space
Supported technology objects		
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
• Number of available Motion Control resources for technology objects	4 800	4 800
• Required Motion Control resources		
- per speed-controlled axis	40	40
- per positioning axis	80	80
- per synchronous axis	160	160
- per external encoder	80	80
- per output cam	20	20
- per cam track	160	160
- per probe	40	40
Controller		
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring		
• High-speed counter	Yes	Yes
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
• Performance level according to ISO 13849-1	PLe	PLe
• SIL acc. to IEC 61508	SIL 3	SIL 3
Probability of failure (for service life of 20 years and repair time of 100 hours)		
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09	< 1.00E-09

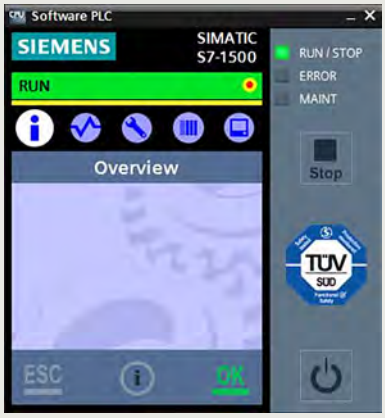
CPU 1508S F Windows

Technical specifications

Article number	**6ES7672-8FC01-0YA0** SIMATIC Failsafe SW Ctrl CPU 1508S F	**6ES7672-8FC02-0YA0** SIMATIC Failsafe SW Ctrl CPU 1508S F
Hardware requirement		
Hardware required	SIMATIC IPC4x7E, IPC627D, IPC677D, IPC827D, configurations with NVRAM required; IPC6x7E, IPC847E	SIMATIC IPC427E, IPC477E (Pro), IPC BX-39A, IPC PX-39A (Pro), IPC627E, IPC677E, IPC647E, IPC847E
Processor		
• Single-core processor	No	No
• Single-core processor with hyper-threading	No	No
• Multi-core processor	Yes	Yes
• Multi-core processor with hyper-threading	Yes	Yes
• occupied cores	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S
Memory		
• Work memory, min.	8 Gbyte	8 Gbyte
• Hard disk memory required for installation	720 Mbyte	720 Mbyte
• Temporary hard disk memory for installation	230 Mbyte	230 Mbyte
• Hard disk memory required at runtime	1 000 Mbyte	1 661 Mbyte
Operating systems		
Runs under operating system		
• Windows 7	Yes; Professional, Enterprise, Ultimate (32 bit and 64 bit); Windows Embedded Standard 7 with delivery image of the SIMATIC IPC	No
• Windows 10	Yes; Windows 10 Enterprise 2016 LTSB, 64-bit, MUI on IPC2x7E, IPC4x7E, IPC6x7D, IPC8x7D; Windows 10 Enterprise 2019 LTSC 64-bit, MUI on IPC2x7E, IPC4x7E, IPC6x7E, IPC8x7E	Yes; Windows 10 Enterprise 2019 LTSC and 2021 LTSC, 64-bit, MUI
Configuration		
Configuration/programming		
Programming language		
- LAD	Yes; incl. failsafe	Yes; incl. failsafe
- FBD	Yes; incl. failsafe	Yes; incl. failsafe
- STL	Yes	Yes
- SCL	Yes	Yes
- CFC	No	Yes
- GRAPH	Yes	Yes
Know-how protection		
• User program protection/ password protection	Yes	Yes
• Copy protection	Yes	Yes
• Block protection	Yes	Yes
Access protection		
• protection of confidential configuration data		Yes
• Protection level: Write protection	Yes	Yes
• Protection level: Read/write protection	Yes	Yes
• Protection level: Write protection for Failsafe	Yes	Yes
• Protection level: Complete protection	Yes	Yes
• User administration		Yes
• Number of users		100
Open Development interfaces		
• Size of ODK SO file, max.	9.8 Mbyte	9.8 Mbyte

CPU 1508S F Linux

Overview



- SIMATIC S7-1500 Software Controller V30.1 with Linux (Industrial OS 3.2.4 or higher) as operating system for implementing the functions of a SIMATIC S7-1500 Controller on SIMATIC IPC
- For use with control applications with increased requirements for program and data memory
- For use as a PC-based controller in machines with distributed I/O via PROFINET
- For utilizing IPC onboard interfaces and PC plug-in cards for PROFINET connections
- Can be used for safety functions up to SIL 3 according to IEC 61508 and up to PL e according to ISO 13849
- Supports PROFIsafe in distributed configurations
- Optimized for PC-based control tasks with the IPC627E Box PC, the IPC677E Panel PC, and the IPC647E and IPC847E Rack PCs
- Execution of functions and algorithms implemented with high-level languages (C++/Python) on Linux (Industrial OS 3.2.4 or higher) using the Realtime Information Backbone (RIB)
- Integrated Motion Control functionalities for controlling speed-controlled and positioning axes as well as synchronous operation, support for external encoders, precise position gearing between axes, output cams/cam tracks and probes (motion control functionalities require PROFINET IRT capability via CP 1625 and a PCIe slot on the IPC)
- Integrated web server for diagnostics with the option of creating user-defined web pages
- OPC UA server (data access) and client as Runtime option for easy connection of the SIMATIC S7-1500 Software Controller to Windows applications or non-Siemens devices/systems

New in version V30.1: General Sales Release Linux (Industrial OS 3.2.4 or higher)

- Support for the current IPC generation SIMATIC IPC427E, IPC477E as well as SIMATIC IPC BX-39A and PX-39A
- Support of UEFI boot and M.2 SSD on all IPC platforms
- Improved commissioning:
  The resource allocation for the SIMATIC S7-1500 Software Controller, e.g. the interfaces used for PROFINET, is now set using a separate tool and no longer with the two-stage download from STEP 7. This permits a flexible choice of IPC without modifying the STEP 7 project
- Communication between Linux applications and the SIMATIC S7-1500 Software Controller is achieved via pure TCP/IP links. Communication with the SIMATIC S7-1500 Software Controller is possible directly through the PC interfaces on the Linux side ("bridging")
- Safety functions possible on IPC without NVRAM
- No direct support from PROFIBUS, PROFIBUS support is only possible with an additional plug-in card
- In order to use the SIMATIC S7-1500 Software Controller V30.1 instead of a previous version (e.g. V21.9), changes in the configuration and installation are required.

CPU 1508S F Linux

Ordering data

	Article No.
SIMATIC S7-1500 Software Controller CPU 1508S F For implementing the function of a fail-safe S7-1500 Controller on a SIMATIC IPC with Linux as operating system (Industrial OS 3.2.4 or higher) **Target system:** Optimized for PC-based control tasks with: IPC677E Panel PC, IPC627E Box PC, IPC647E Rack PC, IPC847E Rack PC; Can also be used with: IPC477E Panel PC, IPC PX-39A Panel PC, IPC427E Box PC, IPC BX-39A Box PC; **Requirement:** Linux (Industrial OS 3.2.4 or higher) with UEFI boot; For supported Linux versions, see Technical specifications; For optimal fail-safe operation, IPC configurations with NVRAM are recommended **Type of delivery:** en, de, fr, es, it, zh	
• Version V30.1 for Windows; Single license for one installation; Software download including license key [1]	**6ES7672-8FD02-0YG0**

Accessories	Article No.
SIMATIC IPC	
• SIMATIC IPC627E Box PC	**6AG4131-3....-....**
• SIMATIC IPC677E Panel PC	**6AV7261-.....-....**
• SIMATIC IPC647E Rack PC	**6AG4112-3....-....**
• SIMATIC IPC847E Rack PC	**6AG4114-3....-....**
• SIMATIC IPC427E Microbox PC	**6AG4141-.....-....**
• SIMATIC IPC477E Panel PC	**6AV7241-.....-....**
• SIMATIC IPC BX-39A Microbox PC	**6AG4142-.....-....**
• SIMATIC IPC PX-39A Panel PC	**6AV7242-.....-....**
For more information, see Catalog ST 80 / ST PC	
CP 1625 communications processor PCI Express x1 card for connecting PROFINET with IRT to the SIMATIC S7-1500 Software Controller	**6ES7648-2CF10-1AA0**
CP 5622 communications processor PCI Express x1 card (32-bit) for connecting a programming device or PC to PROFIBUS (can only be used with version V21.9)	**6GK1562-2AA00**
CP 5623 communications processor PCI Express x1 card (32-bit) for connection to PROFIBUS incl. DP-Base software with NCM PC; DP-RAM interface for DP master or DP device, incl. PG and FDL protocols; single license for 1 installation, Runtime software, software and electronic manual on CD-ROM, Conformance Class A; for operating system support see SIMATIC NET software; en/de (can only be used with version V21.9)	**6GK1562-3AA00**

[1] Up-to-date information and download availability can be found at http://www.siemens.com/tia-online-software-delivery.

Technical specifications

Article number	**6ES7672-8FD02-0YG0** SIMATIC Failsafe SW Ctrl CPU 1508S F DL
General information	
Product type designation	CPU 1508S F
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V20
Memory	
Work memory	
• integrated (for program)	12.5 Mbyte
• integrated (for data)	100 Mbyte
• integrated (for CPU function library of CPU Runtime)	50 Mbyte
Load memory	
• integrated (on PC mass storage)	1 024 Mbyte
CPU processing times	
for bit operations, typ.	1 ns; On IPC427E, Intel Xeon processor
for word operations, typ.	2 ns; On IPC427E, Intel Xeon processor
for fixed point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor
for floating point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor

Article number	**6ES7672-8FD02-0YG0** SIMATIC Failsafe SW Ctrl CPU 1508S F DL
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Size, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte
• Outputs	32 kbyte
Time of day	
Clock	
• Type	Software clock, synchronizable, no battery backup

Technical specifications

Article number	**6ES7672-8FD02-0YG0** SIMATIC Failsafe SW Ctrl CPU 1508S F DL
Interfaces	
Number of interfaces	3
1. Interface	
Interface type	CP 1625
Number of connections	192
Interface types	
• RJ 45 (Ethernet)	Yes
- Transmission rate, max.	100 Mbit/s
- Industrial Ethernet status LED	Yes
• Number of ports	2
• integrated switch	Yes
Protocols	
• IP protocol	Yes; IPv4
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes; Optionally also encrypted
• Web server	Yes
• Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
PROFINET IO Controller	
Services	
- Isochronous mode	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- shortest clock pulse	500 µs
- IRT	Yes
- PROFIenergy	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625
- Number of connectable IO Devices, max.	256; the maximal amount of supported devices on all interfaces (PN/PB) is 384 (256+128) in total; theoretically it should be 509 (256+128+125), but it is accepted to be limited to 384
- Of which IO devices with IRT, max.	64
- Number of connectable IO Devices for RT, max.	256
- of which in line, max.	256
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8
- IO Devices changing during operation (partner ports), supported	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1
Address area	
- Inputs, max.	16 kbyte
- Outputs, max.	16 kbyte

Article number	**6ES7672-8FD02-0YG0** SIMATIC Failsafe SW Ctrl CPU 1508S F DL
PROFINET IO Device	
Services	
- PG/OP communication	Yes
- Isochronous mode	No
- IRT	Yes
- PROFIenergy	Yes
- Prioritized startup	Yes
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
- Asset management record	Yes
- PROFINET Security Class	SNMP Configuration and DCP Read Only
2. Interface	
Interface type	Onboard PROFINET / IE interface X2 of the SIMATIC IPC, Intel Springville i210T
Number of connections	192
Interface types	
• RJ 45 (Ethernet)	Yes
- Transmission rate, max.	100 Mbit/s
- Industrial Ethernet status LED	Yes
• Number of ports	1
• integrated switch	No
Protocols	
• IP protocol	Yes; IPv4
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• PROFIBUS DP master	No
• PROFIBUS DP device	No
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	No
PROFIBUS DP master	
• max. number of DP devices	Profibus interface is not available.
Services	
- Equidistance	No
- Isochronous mode	No

Technical specifications

Article number	**6ES7672-8FD02-0YG0** SIMATIC Failsafe SW Ctrl CPU 1508S F DL
PROFINET IO Controller	
Services	
- Isochronous mode	No
- IRT	No
- PROFIenergy	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Number of connectable IO Devices for RT, max.	128; the maximal amount of supported devices on all interfaces (PN/PB) is 384 (256+128) in total; theoretically it should be 509 (256+128+125), but it is accepted to be limited to 384
- of which in line, max.	128
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1
Address area	
- Inputs, max.	8 kbyte
- Outputs, max.	8 kbyte
PROFINET IO Device	
Services	
- Isochronous mode	No
- IRT	No
- PROFIenergy	Yes
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
- Asset management record	Yes
- PROFINET Security Class	SNMP Configuration and DCP Read Only
Protocols	
Number of connections	
• Number of connections, max.	192
Redundancy mode	
Media redundancy	
- MRP	Yes
- MRPD	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50
SIMATIC communication	
• S7 routing	Yes
OPC UA	
• OPC UA Client	Yes; Data access (read, write), method call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space

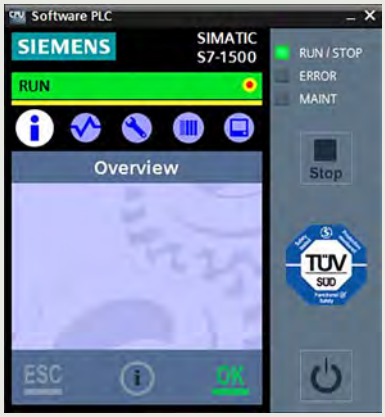
Article number	**6ES7672-8FD02-0YG0** SIMATIC Failsafe SW Ctrl CPU 1508S F DL
Supported technology objects	
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
• Number of available Motion Control resources for technology objects	4 800
• Required Motion Control resources	
- per speed-controlled axis	40
- per positioning axis	80
- per synchronous axis	160
- per external encoder	80
- per output cam	20
- per cam track	160
- per probe	40
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	PLe
• SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repair time of 100 hours)	
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09
Hardware requirement	
Hardware required	SIMATIC IPC427E, IPC477E (Pro), IPC BX-39A, IPC PX-39A (Pro)
Processor	
• Single-core processor	No
• Single-core processor with hyper-threading	No
• Multi-core processor	Yes
• Multi-core processor with hyper-threading	Yes
• occupied cores	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S
Memory	
• Work memory, min.	8 Gbyte
• Hard disk memory required for installation	3 Gbyte
• Temporary hard disk memory for installation	300 Mbyte
• Hard disk memory required at runtime	1 700 Mbyte

Technical specifications

Article number	**6ES7672-8FD02-0YG0** SIMATIC Failsafe SW Ctrl CPU 1508S F DL
Configuration	
Configuration/programming	
Programming language	
- LAD	Yes; incl. failsafe
- FBD	Yes; incl. failsafe
- STL	Yes
- SCL	Yes
- CFC	Yes
- GRAPH	Yes
Know-how protection	
• User program protection/ password protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• protection of confidential configuration data	Yes
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Write protection for Failsafe	Yes
• Protection level: Complete protection	Yes
• User administration	Yes
• Number of users	100
Open Development interfaces	
• Size of ODK SO file, max.	9.8 Mbyte

CPU 1508S T

Overview



For the Software Controller CPU 1508S T, generally the same product information as for the CPU 1508S apply. Differences are specified in the product overview or the operating instructions. Special features of the CPU 1508S T compared to the standard CPU result from the optimization for Motion Control applications in the high-end range.

The main differences are:

- Adjustments to the quantity structure, e.g. data storage, Motion Control resources, IRT participants (see Technical specifications)
- Focus on real-time applications and performance of PLC applications as opposed to the performance of Windows applications.
- Parallel and independent operation of the Windows operating system and the PLC application is possible. However, a forced restart of the Windows system (e.g. after Windows update) will also cause the PLC (Windows SMIs) to restart
- Supported IPC hardware:
  - IPC 627E Box with Intel Core i7
  - IPC 677E Panel with Intel Core i7

Ordering data

	Article No.
CPU 1508S T Software Controller For the implementation of a technology controller on SIMATIC IPC **Target system:** Optimized for PC-based control tasks with Box PC SIMATIC IPC627E and Panel PC SIMATIC IPC677E **Requirements:** Windows 10 (64-bit) with UEFI boot; for supported Windows 10 version, see Technical specifications **Type of delivery:** en, de, fr, it, es, zh	
SIMATIC S7-1500, software CPU 1508S T Software Controller Single license for 1 installation, Runtime software Class A; Runtime software, software and documentation on DVD, license key on USB flash drive; 6 languages (en, de, fr, it, es, zh), executable on Windows 10 Reference hardware: IPC627E (i7)	**6ES7672-8TC02-0YA0**
SIMATIC S7-1500, software CPU 1508S T Software Controller Single license for 1 installation, Runtime software Class A; Runtime software, software, documentation and license key download[1]; 6 languages (en, de, fr, it, es, zh); executable on Windows 10; Reference hardware: IPC627E (i7) ********** Consignee email address required for delivery	**6ES7672-8TC02-0YG0**

	Article No.
Accessories	
SIMATIC IPC627E (Box PC) UHD graphics onboard; DP/DVI-D; 3x Gigabit Ethernet (IE/PN); 6x USB 3.1 Gen. 2; 1x serial (COM 1); RAID controller on board; watchdog, temperature and fan monitoring	**6AG4131-3....-....**
SIMATIC IPC677E (Panel PC) UHD graphics onboard; DP/DVI-D; 3x Gigabit Ethernet (IE/PN); 6x USB 3.1 Gen. 2; 1x serial (COM 1); RAID controller on board; watchdog, temperature and fan monitoring	**6AV7261-.....-....**

[1] Up-to-date information and download availability can be found at https://www.siemens.com/tia-online-software-delivery.

8

Technical specifications

Article number	**6ES7672-8TC02-0YA0** SIMATIC Software Controller CPU 1508S T
General information	
Product type designation	CPU 1508S T
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V20
Memory	
Work memory	
• integrated (for program)	12.5 Mbyte
• integrated (for data)	32 Mbyte
• integrated (for CPU function library of CPU Runtime)	50 Mbyte; Note: The "CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.
Load memory	
• integrated (on PC mass storage)	1 024 Mbyte
CPU processing times	
for bit operations, typ.	1 ns; On IPC427E, Intel Xeon processor
for word operations, typ.	2 ns; On IPC427E, Intel Xeon processor
for fixed point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor
for floating point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Size, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte
• Outputs	32 kbyte
Time of day	
Clock	
• Type	Software clock, synchronizable, no battery backup
Interfaces	
Number of interfaces	3
1. Interface	
Interface type	CP 1625
Number of connections	192
Interface types	
• RJ 45 (Ethernet)	Yes
- Transmission rate, max.	100 Mbit/s
- Industrial Ethernet status LED	Yes
• Number of ports	2
• integrated switch	Yes

Article number	**6ES7672-8TC02-0YA0** SIMATIC Software Controller CPU 1508S T
Protocols	
• IP protocol	Yes; IPv4
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes; Optionally also encrypted
• Web server	Yes
• Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
PROFINET IO Controller	
Services	
- Isochronous mode	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- IRT	Yes
- PROFIenergy	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625
- Number of connectable IO Devices, max.	256; the maximal amount of supported devices on all interfaces (PN/PB) is 384 (256+128) in total; theoretically it should be 509 (256+128+125), but it is accepted to be limited to 384
- Of which IO devices with IRT, max.	256; over CP1625 with DFP
- Number of connectable IO Devices for RT, max.	256
- of which in line, max.	256
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8
- IO Devices changing during operation (partner ports), supported	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1
Address area	
- Inputs, max.	16 kbyte
- Outputs, max.	16 kbyte
PROFINET IO Device	
Services	
- Isochronous mode	No
- IRT	Yes
- PROFIenergy	Yes
- Prioritized startup	Yes
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
- Asset management record	Yes
- PROFINET Security Class	SNMP Configuration and DCP Read Only

Technical specifications

Article number	**6ES7672-8TC02-0YA0** SIMATIC Software Controller CPU 1508S T
2. Interface	
Interface type	Onboard PROFINET / IE interface X2 of the SIMATIC IPC, Intel Springville i210T
Number of connections	192
Interface types	
• RJ 45 (Ethernet)	Yes
- Transmission rate, max.	100 Mbit/s
- Industrial Ethernet status LED	Yes
• Number of ports	1
• integrated switch	No
Protocols	
• IP protocol	Yes; IPv4
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• PROFIBUS DP master	No
• PROFIBUS DP device	No
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	No
PROFINET IO Controller	
Services	
- Isochronous mode	No
- IRT	No
- PROFIenergy	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Number of connectable IO Devices for RT, max.	128; the maximal amount of supported devices on all interfaces (PN/PB) is 384 (256+128) in total; theoretically it should be 509 (256+128+125), but it is accepted to be limited to 384
- of which in line, max.	128
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1
Address area	
- Inputs, max.	8 kbyte
- Outputs, max.	8 kbyte

Article number	**6ES7672-8TC02-0YA0** SIMATIC Software Controller CPU 1508S T
PROFINET IO Device	
Services	
- Isochronous mode	No
- IRT	No
- PROFIenergy	Yes
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
- Asset management record	Yes
- PROFINET Security Class	SNMP Configuration and DCP Read Only
Protocols	
Number of connections	
• Number of connections, max.	192
Redundancy mode	
Media redundancy	
- MRP	Yes
- MRPD	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50
SIMATIC communication	
• S7 routing	Yes
OPC UA	
• OPC UA Client	Yes; Data access (read, write), method call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space

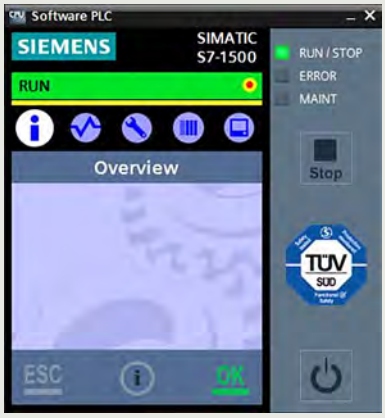
Technical specifications

Article number	**6ES7672-8TC02-0YA0** SIMATIC Software Controller CPU 1508S T
Supported technology objects	
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
• Number of available Motion Control resources for technology objects	26 800
• Required Motion Control resources	
- per speed-controlled axis	40
- per positioning axis	80
- per synchronous axis	160
- per external encoder	80
- per output cam	20
- per cam track	160
- per probe	40
• Number of available Extended Motion Control resources for technology objects	768
• Required Extended Motion Control resources	
- per cam (1 000 points and 50 segments)	2
- per cam (10 000 points and 50 segments)	20
- for each set of kinematics	30
- Per leading axis proxy	3
• kinematics functions	
- kinematics with up to 4 interpolating axes	Yes
- kinematics with 5 or more interpolating axes	No
• Positioning axis	
- Number of positioning axes, max.	310
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes

Article number	**6ES7672-8TC02-0YA0** SIMATIC Software Controller CPU 1508S T
Hardware requirement	
Hardware required	SIMATIC IPC627E, IPC677E (with Intel i7-8700)
Processor	
• Single-core processor	No
• Single-core processor with hyper-threading	No
• Multi-core processor	Yes
• Multi-core processor with hyper-threading	Yes
• occupied cores	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S
Memory	
• Work memory, min.	8 Gbyte
• Hard disk memory required for installation	720 Mbyte
• Temporary hard disk memory for installation	230 Mbyte
• Hard disk memory required at runtime	1 661 Mbyte
Operating systems	
Runs under operating system	
• Windows 10	Yes; Windows 10 Enterprise 2019 LTSC and 2021 LTSC
Configuration	
Configuration/programming	
Programming language	
- LAD	Yes
- FBD	Yes
- STL	Yes
- SCL	Yes
- CFC	Yes
- GRAPH	Yes
Know-how protection	
• User program protection/ password protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• protection of confidential configuration data	Yes
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Complete protection	Yes
• User administration	Yes
• Number of users	100
Open Development interfaces	
• Size of ODK SO file, max.	9.8 Mbyte

CPU 1508S TF

Overview



For the Software Controller CPU 1508S TF, generally the same product information as for the CPU 1508S F apply. Differences are specified in the product overview or the operating instructions. Special features of the CPU 1508S TF compared to the failsafe CPU result from the optimization for Motion Control applications in the high-end range.

The main differences are:

- Adjustments to the quantity structure, e.g. data storage, Motion Control resources, IRT participants (see Technical specifications)
- Focus on real-time applications and performance of PLC applications as opposed to the performance of Windows applications
- Parallel and independent operation of the Windows operating system and the PLC application is possible. However, a forced restart of the Windows system (e.g. after Windows update) will also cause the PLC (Windows SMIs) to restart
- Supported IPC hardware:
  - IPC 627E Box with Intel Core i7
  - IPC 677E Panel with Intel Core i7

Ordering data

	Article No.
CPU 1508S TF Software Controller For the implementation of a fail-safe technology controller on SIMATIC IPC **Target system:** Optimized for PC-based control tasks with Box PC SIMATIC IPC627E and Panel PC SIMATIC IPC677E **Requirements:** Windows 10 (64-bit) with UEFI boot; for supported Windows 10 version, see Technical specifications **Type of delivery:** en, de, fr, it, es, zh	
SIMATIC S7-1500, software CPU 1508S TF Software Controller Single license for 1 installation, runtime software Class A; Runtime software, software, and documentation on DVD, license key on USB flash drive; 6 languages (en, de, fr, it, es, zh), Runs on Windows 10 Reference hardware: IPC627E (i7)	**6ES7672-8UC02-0YA0**
SIMATIC S7-1500, software CPU 1508S TF Software Controller Single license for 1 installation, runtime software Class A; Runtime software, software, documentation and license key download[1]; 6 languages (en, de, fr, it, es, zh); runs on Windows 10; Reference hardware: IPC627E (i7); Consignee email address required for delivery	**6ES7672-8UC02-0YG0**
Accessories	
SIMATIC IPC627E (Box PC) UHD graphics onboard; DP/DVI-D; 3x Gigabit Ethernet (IE/PN); 6x USB 3.1 Gen. 2; 1x serial (COM 1); RAID controller on board; watchdog, temperature and fan monitoring	**6AG4131-3....-....**
SIMATIC IPC677E (Panel PC) UHD graphics onboard; DP/DVI-D; 3x Gigabit Ethernet (IE/PN); 6x USB 3.1 Gen. 2; 1x serial (COM 1); RAID controller on board; watchdog, temperature and fan monitoring	**6AV7261-.....-....**

[1] Up-to-date information and download availability can be found at https://www.siemens.com/tia-online-software-delivery.

8

CPU 1508S TF

Technical specifications

Article number	**6ES7672-8UC02-0YA0** SIMATIC Software Controller CPU 1508S TF
General information	
Product type designation	CPU 1508S TF
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V20
Memory	
Work memory	
• integrated (for program)	12.5 Mbyte
• integrated (for data)	32 Mbyte
• integrated (for CPU function library of CPU Runtime)	50 Mbyte; Note: The "CPU function library of the CPU" are C/C++ blocks for the user program that were created using the SIMATIC ODK 1500S or Target 1500S.
Load memory	
• integrated (on PC mass storage)	1 024 Mbyte
CPU processing times	
for bit operations, typ.	1 ns; On IPC427E, Intel Xeon processor
for word operations, typ.	2 ns; On IPC427E, Intel Xeon processor
for fixed point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor
for floating point arithmetic, typ.	2 ns; On IPC427E, Intel Xeon processor
Counters, timers and their retentivity	
S7 counter	
• Number	2 048
IEC counter	
• Number	Any (only limited by the main memory)
S7 times	
• Number	2 048
IEC timer	
• Number	Any (only limited by the main memory)
Data areas and their retentivity	
Flag	
• Size, max.	16 kbyte
Address area	
I/O address area	
• Inputs	32 kbyte
• Outputs	32 kbyte
Time of day	
Clock	
• Type	Software clock, synchronizable, no battery backup
Interfaces	
Number of interfaces	3
1. Interface	
Interface type	CP 1625
Number of connections	192
Interface types	
• RJ 45 (Ethernet)	Yes
- Transmission rate, max.	100 Mbit/s
- Industrial Ethernet status LED	Yes
• Number of ports	2
• integrated switch	Yes

Article number	**6ES7672-8UC02-0YA0** SIMATIC Software Controller CPU 1508S TF
Protocols	
• IP protocol	Yes; IPv4
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• SIMATIC communication	Yes
• Open IE communication	Yes; Optionally also encrypted
• Web server	Yes
• Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
PROFINET IO Controller	
Services	
- Isochronous mode	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- IRT	Yes
- PROFIenergy	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be seperated by means of a switch (e.g SCALANCE X205) or CP1625
- Number of connectable IO Devices, max.	256; the maximal amount of supported devices on all interfaces (PN/PB) is 384 (256+128) in total; theoretically it should be 509 (256+128+125), but it is accepted to be limited to 384
- Of which IO devices with IRT, max.	256; over CP1625 with DFP
- Number of connectable IO Devices for RT, max.	256
- of which in line, max.	256
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8
- IO Devices changing during operation (partner ports), supported	Yes; the CPU and changing IO devices must be separated by a switch (e.g. SCALANCE X205)
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1
Address area	
- Inputs, max.	16 kbyte
- Outputs, max.	16 kbyte
PROFINET IO Device	
Services	
- Isochronous mode	No
- IRT	Yes
- PROFIenergy	Yes
- Prioritized startup	Yes
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
- Asset management record	Yes
- PROFINET Security Class	SNMP Configuration and DCP Read Only

Technical specifications

Article number	**6ES7672-8UC02-0YA0** SIMATIC Software Controller CPU 1508S TF
2. Interface	
Interface type	Onboard PROFINET / IE interface X2 of the SIMATIC IPC, Intel Springville i210T
Number of connections	192
Interface types	
• RJ 45 (Ethernet)	Yes
- Transmission rate, max.	100 Mbit/s
- Industrial Ethernet status LED	Yes
• Number of ports	1
• integrated switch	No
Protocols	
• IP protocol	Yes; IPv4
• PROFINET IO Controller	Yes
• PROFINET IO Device	Yes
• PROFIBUS DP master	No
• PROFIBUS DP device	No
• SIMATIC communication	Yes
• Open IE communication	Yes
• Web server	Yes
• Media redundancy	No
PROFINET IO Controller	
Services	
- Isochronous mode	No
- IRT	No
- PROFIenergy	Yes
- Prioritized startup	Yes; max. 32 PROFINET devices; if you want to use the "Prioritized startup" functionality in STEP 7 for the PROFINET interface of the CPU, the CPU and the device must be separated by means of a switch (e.g. SCALANCE X205)
- Number of connectable IO Devices for RT, max.	128; the maximal amount of supported devices on all interfaces (PN/PB) is 384 (256+128) in total; theoretically it should be 509 (256+128+125), but it is accepted to be limited to 384
- of which in line, max.	128
- Number of IO Devices that can be simultaneously activated/deactivated, max.	8
- Number of IO Devices per tool, max.	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
- PROFINET Security Class	1
Address area	
- Inputs, max.	8 kbyte
- Outputs, max.	8 kbyte

Article number	**6ES7672-8UC02-0YA0** SIMATIC Software Controller CPU 1508S TF
PROFINET IO Device	
Services	
- Isochronous mode	No
- IRT	No
- PROFIenergy	Yes
- Shared device	Yes
- Number of IO Controllers with shared device, max.	4
- Asset management record	Yes
- PROFINET Security Class	SNMP Configuration and DCP Read Only
Protocols	
Number of connections	
• Number of connections, max.	192
Redundancy mode	
Media redundancy	
- MRP	Yes
- MRPD	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50
SIMATIC communication	
• S7 routing	Yes
OPC UA	
• OPC UA Client	Yes; Data access (read, write), method call
• OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space

CPU 1508S TF

Technical specifications

Article number	**6ES7672-8UC02-0YA0** SIMATIC Software Controller CPU 1508S TF
Supported technology objects	
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool or SIZER
• Number of available Motion Control resources for technology objects	26 800
• Required Motion Control resources	
- per speed-controlled axis	40
- per positioning axis	80
- per synchronous axis	160
- per external encoder	80
- per output cam	20
- per cam track	160
- per probe	40
• Number of available Extended Motion Control resources for technology objects	768
• Required Extended Motion Control resources	
- per cam (1 000 points and 50 segments)	2
- per cam (10 000 points and 50 segments)	20
- for each set of kinematics	30
- Per leading axis proxy	3
• kinematics functions	
- kinematics with up to 4 interpolating axes	Yes
- kinematics with 5 or more interpolating axes	No
• Positioning axis	
- Number of positioning axes, max.	310
Controller	
• PID_Compact	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature
Counting and measuring	
• High-speed counter	Yes
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
• Performance level according to ISO 13849-1	PLe
• SIL acc. to IEC 61508	SIL 3
Probability of failure (for service life of 20 years and repair time of 100 hours)	
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05
- High demand/continuous mode: PFH in accordance with SIL3	< 1.00E-09

Article number	**6ES7672-8UC02-0YA0** SIMATIC Software Controller CPU 1508S TF
Hardware requirement	
Hardware required	SIMATIC IPC627E, IPC677E (with Intel i7-8700 and NVRAM)
Processor	
• Single-core processor	No
• Single-core processor with hyper-threading	No
• Multi-core processor	Yes
• Multi-core processor with hyper-threading	Yes
• occupied cores	1; For multicore processors with activated Hyper-Threading, one complete physical core is reserved for the CPU 1507S
Memory	
• Work memory, min.	8 Gbyte
• Hard disk memory required for installation	720 Mbyte
• Temporary hard disk memory for installation	230 Mbyte
• Hard disk memory required at runtime	1 661 Mbyte
Operating systems	
Runs under operating system	
• Windows 10	Yes; Windows 10 Enterprise 2019 LTSC and 2021 LTSC
Configuration	
Configuration/programming	
Programming language	
- LAD	Yes; incl. failsafe
- FBD	Yes; incl. failsafe
- STL	Yes
- SCL	Yes
- CFC	Yes
- GRAPH	Yes
Know-how protection	
• User program protection/ password protection	Yes
• Copy protection	Yes
• Block protection	Yes
Access protection	
• protection of confidential configuration data	Yes
• Protection level: Write protection	Yes
• Protection level: Read/write protection	Yes
• Protection level: Write protection for Failsafe	Yes
• Protection level: Complete protection	Yes
• User administration	Yes
• Number of users	100
Open Development interfaces	
• Size of ODK SO file, max.	9.8 Mbyte

Overview ODK 1500S SQL driver

Note

This catalog entry contains non-binding information on a supplementary application software for the SIMATIC S7-1500 Software Controller and the SIMATIC ET 200SP Open Controller.

Overview

The ODK 1500S SQL driver enables direct access to an SQL database from the PLC program. In this case the database can be installed on the same computer as the S7-1500 Software Controller or in the network.

- Direct data exchange with SQL-based database by means of SQL commands from the PLC program
- Connection to SQL-based database on the same PC or to database servers in the network

Technical specifications

Supported SQL commands	• SELECT • INSERT • UPDATE • DELETE
Supported data types	All standard SQL data types
System requirements	
• Runtime PC	SIMATIC IPC with S7-1500 Software Controller or SIMATIC ET 200SP Open Controller
• Engineering	STEP 7 in the TIA Portal V13 SP1

More information

If you are interested, please contact your sales representative under http://www.automation.siemens.com/partner/.

You can find Service and Support under https://support.industry.siemens.com/cs/ww/en/view/109479140.

Overview ODK 1500S XML Data Access driver

Note

This catalog entry contains non-binding information about supplementary application software for the SIMATIC S7-1500 Software Controller and the SIMATIC ET 200SP Open Controller.

Overview

With the function blocks of the ODK 1500S XML Data Access driver it is possible to access specific information in XML files in the Windows file system from the PLC program.

XPath expressions are used for accessing XML file elements since they provide the highest possible flexibility for processing XML data. This means that extremely large XML files can be edited, too.

The driver offers the following functionality:

- XML data can be read into and processed in the PLC.
- XML data can be modified and written back to the XML file.

Technical specifications

System requirements	
• Runtime PC	SIMATIC IPC with SIMATIC S7-1500 Software Controller or SIMATIC ET 200SP Open Controller
• Engineering	STEP 7 in TIA Portal V13 SP1

More information

If you are interested, please contact your sales representative under http://www.automation.siemens.com/partner/.

You can find Service and Support under https://support.industry.siemens.com/cs/ww/en/view/109479496.

Overview ODK 1500S FileServer

Note

This catalog entry contains non-binding information about supplementary application software for the SIMATIC S7-1500 Software Controller and the SIMATIC ET 200SP Open Controller.

Overview

The ODK 1500S FileServer enhances the SIMATIC S7-1500 Software Controller file function with an option enabling direct access to the Windows file system of the PC from the STEP 7 program.

The driver enables reading and writing of data blocks in/from files in structured form. Various file formats are supported.

There are also FBs available for handling files (e.g. renaming, deleting).

Technical specifications

Supported file formats	• CSV • ASCII • Windows-INI • XML[1)] • Binary
System requirements	
• Runtime PC	SIMATIC IPC with SIMATIC S7-1500 Software Controller or SIMATIC ET 200SP Open Controller
• Engineering	STEP 7 in TIA Portal V13 SP1

1) The XML format is predefined. A DB can be saved and read in as an XML file. It is not possible to parse any particular XML file.

More information

If you are interested, please contact your sales representative under http://www.automation.siemens.com/partner/.

You can find Service and Support under https://support.industry.siemens.com/cs/ww/en/view/109479497.

Overview ODK 1500S SMX driver

Note

This catalog entry contains non-binding information about supplementary application software for the SIMATIC S7-1500 Software Controller and the SIMATIC ET 200SP Open Controller.

Overview

The ODK 1500S SMX driver permits access from a Windows user program to data of the PLC program. A shared memory which can be accessed by the PLC and user program is set up for this purpose. The ODK 1500S simplifies the changeover to the SIMATIC S7-1500 Software Controller of applications that previously used the SMX interface of the SIMATIC WinAC RTX.

More information

If you are interested, please contact your sales representative under http://www.automation.siemens.com/partner/.

You can find Service and Support under https://support.industry.siemens.com/cs/ww/en/view/109741583.

Overview ODK 1500S serial driver

Note

This catalog entry contains non-binding information about supplementary application software for the SIMATIC S7-1500 Software Controller and the SIMATIC ET 200SP Open Controller.

Overview

The ODK 1500S serial driver enables serial communication from the STEP 7 user program via the integrated serial interface of a SIMATIC IPC or, depending on the application environment, via a USB-to-serial adapter. All serial interfaces of the PC are supported, which are addressed in Windows as COM*n* interface, e.g. RS232, RS422 or RS485.

More information

If you are interested, please contact your sales representative under http://www.automation.siemens.com/partner/.

You can find Service and Support under https://support.industry.siemens.com/cs/ww/en/view/109479259.