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Data sheet 6ES7672-7FC04-0YG0



SIMATIC S7-1500 Failsafe Software Controller CPU 1507S F single license for 1 installation, runtime software class A; runtime software, software, documentation and license key download; 6 languages (de,en,it,fr,es,zh); executable in Windows 11; reference hardware: SIMATIC IPC BX-59A, SIMATIC IPC BX/PX-39A (PRO) -- consignee email address required for delivery

General information	
Product type designation	CPU 1507S F
Software version	V40.1
Product function	
● I&M data	Yes; I&M0 to I&M3
● SysLog	Yes
Engineering with	
● STEP 7 TIA Portal configurable/integrated from version	V21 Update 1
Configuration control	
via dataset	Yes
Storage	
SIMATIC memory card required	No; Use of the PC mass storage
Work memory	
● integrated (for program)	15 Mbyte
● integrated (for data)	50 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)	320 Mbyte
Backup	
● with UPS	Yes; all memory areas declared retentive
● with non-volatile memory	Yes; Depending on PC hardware
CPU processing times	
for bit operations, typ.	0.3 ns; On BX-59A, Core i7-13700E, 3.6 GHz
for word operations, typ.	0.8 ns; On BX-59A, Core i7-13700E, 3.6 GHz
for fixed point arithmetic, typ.	0.8 ns; On BX-59A, Core i7-13700E, 3.6 GHz
for floating point arithmetic, typ.	2 ns; On BX-59A, Core i7-13700E, 3.6 GHz
CPU-blocks	
Number of elements (total)	20 000; Blocks (OB, FB, FC, DB) and UDTs
DB	
● Size, max.	16 Mbyte; For DBs with absolute addressing, the max. size is 64 KB
FB	
● Size, max.	1 Mbyte
FC	
● Size, max.	1 Mbyte
OB	
● Size, max.	1 Mbyte
● Number of free cycle OBs	100

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● Number of time alarm OBs	20
● Number of delay alarm OBs	20
● Number of cyclic interrupt OBs	20; with minimum OB 3x cycle of 100 µs
● Number of process alarm OBs	50
● Number of DPV1 alarm OBs	3
● Number of isochronous mode OBs	2
● Number of startup OBs	100
● Number of asynchronous error OBs	4
● Number of synchronous error OBs	2
● Number of diagnostic alarm OBs	1
Nesting depth	
● per priority class	24; Up to 8 possible for F-blocks
Counters, timers and their retentivity	
S7 counter	
● Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
● Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
S7 timer	
● Number	2 048
Retentivity	
— adjustable	Yes
IEC timer	
● Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	135 kbyte; on SIMATIC IPC with NVRAM option
Extended retentive data area (incl. timers, counters, flags), max.	20 Mbyte; When using PC mass storage for retentive data
Flag	
● Size, max.	16 kbyte
● Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
Data blocks	
● Retentivity adjustable	Yes
● Retentivity preset	No
Local data	
● per priority class, max.	64 kbyte; max. 16 KB per block
Address area	
Number of IO modules	8 192; max. number of modules / submodules
I/O address area	
● Inputs	32 kbyte; All inputs are in the process image
● Outputs	32 kbyte; All outputs are in the process image
Subprocess images	
● Number of subprocess images, max.	32
Hardware configuration	
Number of distributed IO systems	20
Number of DP masters	
● via PC interfaces	Profibus interface is not available.
● Via CM	Profibus interface is not available.
Number of IO Controllers	
● via PC interfaces	3; any combination of RT or IRT interfaces
Time of day	
Clock	
● Type	Software clock, synchronizable, no battery backup
● Deviation per day, max.	Depending on PC hardware
Operating hours counter	

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● Number	16
Clock synchronization	
● supported	Yes
● to DP, master	No
● on Ethernet via NTP	Yes
● on Windows clock, device	Yes
Interfaces	
Number of interfaces	3; max. value; depends on IPC model & inserted CP card
Number of PROFINET interfaces	3
Number of PROFIBUS interfaces	0
1. Interface	
Interface type	SIMATIC CP1625-2 PCIe Card (for BX-39A, refer to manual)
Interface types	
● RJ 45 (Ethernet)	Yes; X301 X1
— 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
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; per user program
— Prioritized startup	Yes; Max. 32 PROFINET devices
— Number of connectable IO Devices, max.	256; in total, up to 640 distributed I/O devices can be connected
— Of which IO devices with IRT, max.	64; with DFP: 256 IO devices in 8 DFP groups
— 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; in total across all interfaces
— 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
Update time for IRT	
— for send cycle of 250 µs	250 µs to 4 ms
— for send cycle of 500 µs	500 µs to 8 ms
— for send cycle of 1 ms	1 ms to 16 ms
— for send cycle of 2 ms	2 ms to 32 ms
— for send cycle of 4 ms	4 ms to 64 ms
— With IRT and parameterization of "odd" send cycles	Update time = set "odd" send clock (any multiple of 125 µs: 375 µs, 625 µs ... 3 875 µs)
Update time for RT	
— for send cycle of 250 µs	250 µs to 128 ms
— for send cycle of 500 µs	500 µs to 256 ms
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	2 ms to 512 ms
— for send cycle of 4 ms	4 ms to 512 ms
Address area	

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— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
PROFINET IO Device	
Services	
— Isochronous mode	Yes
— IRT	Yes
— PROFIenergy	Yes; per user program
— Shared device	Yes
— Number of IO Controllers with shared device, max.	4
— activation/deactivation of I-devices	Yes; per user program
— Asset management record	Yes; per user program
— PROFINET Security Class	SNMP Configuration and DCP Read Only
2. Interface	
Interface type	SIMATIC CP1625-2 PCIe Card (for BX-39A, refer to manual)
Interface types	
● RJ 45 (Ethernet)	Yes; X301 X2
— 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
PROFINET IO Controller	
Services	
— Isochronous mode	Yes
— Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)
— IRT	Yes
— PROFIenergy	Yes; per user program
— Prioritized startup	No
— Number of connectable IO Devices, max.	256; in total, up to 640 distributed I/O devices can be connected
— Of which IO devices with IRT, max.	64; with DFP: 256 IO devices in 8 DFP groups
— 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; in total across all interfaces
— 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
Update time for IRT	
— for send cycle of 250 µs	250 µs to 4 ms
— for send cycle of 500 µs	500 µs to 8 ms
— for send cycle of 1 ms	1 ms to 16 ms
— for send cycle of 2 ms	2 ms to 32 ms
— for send cycle of 4 ms	4 ms to 64 ms
— With IRT and parameterization of "odd" send cycles	Update time = set "odd" send clock (any multiple of 125 µs: 375 µs, 625 µs ... 3 875 µs)
Update time for RT	
— for send cycle of 250 µs	250 µs to 128 ms
— for send cycle of 500 µs	500 µs to 256 ms
— for send cycle of 1 ms	1 ms to 512 ms
— for send cycle of 2 ms	2 ms to 512 ms
— for send cycle of 4 ms	4 ms to 512 ms

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Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
PROFINET IO Device	
Services	
— Isochronous mode	Yes
— IRT	Yes
— PROFIenergy	Yes; per user program
— Shared device	Yes
— Number of IO Controllers with shared device, max.	4
— activation/deactivation of I-devices	Yes; per user program
— Asset management record	Yes; per user program
— PROFINET Security Class	SNMP Configuration and DCP Read Only
3. Interface	
Interface type	Onboard PROFINET / IE interface X2,X3 or X4 (refer to manual)
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
● SIMATIC communication	Yes
● Open IE communication	Yes; Optionally also encrypted
● Web server	Yes
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; in total, up to 640 distributed I/O devices can be connected
— 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
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
Protocols	
PROFIsafe	Yes; V2.4 / V2.6
Number of connections	
● Number of connections, max.	128
● Number of connections reserved for ES/HMI/web	10
● Number of S7 routing paths	16

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Redundancy mode	
● H-Sync forwarding	Yes
Media redundancy	
— Media redundancy	via interfaces of SIMATIC CP1625-2
— MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
— MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
— 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	
● PG/OP communication	Yes; encryption with TLS V1.3 pre-selected
● S7 routing	Yes; not via Windows interfaces
● S7 communication, as server	Yes
● S7 communication, as client	Yes
● User data per job, max.	See online help (S7 communication, user data size)
Open IE communication	
● TCP/IP	Yes
— Data length, max.	64 kbyte
— several passive connections per port, supported	Yes
● ISO-on-TCP (RFC1006)	Yes
— Data length, max.	64 kbyte
● UDP	Yes
— Data length, max.	2 kbyte; 1 472 bytes for UDP broadcast
— UDP multicast	Yes; max. 128 multicast circuits
● DHCP	Yes
● DNS	Yes
● SNMP	Yes
● DCP	Yes
● LLDP	Yes
● Encryption	Yes; Optional
Web server	
● HTTP	Yes; Standard and user pages
● HTTPS	Yes; Standard and user pages
● web API	
— Number of sessions, max.	200
— number of simultaneous HTTP calls, max.	4
— HTTP request body, max.	131 072 byte
OPC UA	
● Runtime license required	Yes; "Medium" license required
● OPC UA Client	Yes; Data Access (registered Read/Write), Method Call
— Application authentication	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
— User authentication	"anonymous" or by user name & password
— Number of connections, max.	40
— Number of nodes of the client interfaces, recommended max.	5 000
— Number of elements for one call of OPC_UA_NodeGetHandleList/OPC_UA_ReadList/OPC_U max.	300
— Number of elements for one call of OPC_UA_NameSpaceGetIndexList, max.	20
— Number of elements for one call of OPC_UA_MethodGetHandleList, max.	100
— Number of simultaneous calls of the client instructions for session management, per connection, max.	1
— Number of simultaneous calls of the client instructions for data access, per connection, max.	5; for OPC_UA_MethodCall 200 in total (no limit per connection)
— Number of registerable nodes, max.	5 000
— Number of registerable method calls of	100

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OPC_UA_MethodCall, max.	
— Number of inputs/outputs when calling OPC_UA_MethodCall, max.	20
● OPC UA Server	Yes; data access (read, write, subscribe), method call, alarms & condition (A&C), custom address space, role-based access control
— Application authentication	Yes
— Security policies	available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss
— User authentication	"anonymous" or by user name & password
— GDS support (certificate management)	Yes
— Number of sessions, max.	64
— Number of accessible variables, max.	200 000
— Number of registerable nodes, max.	50 000
— Number of subscriptions per session, max.	50
— Sampling interval, min.	10 ms
— Publishing interval, min.	10 ms
— Number of server methods, max.	4 000; max. 100 concurrently running jobs each for asynchronous instructions OPC_UA_ServerMethodPre (V1.1) and OPC_UA_ServerMethodPost (V1.1)
— Number of inputs/outputs per server method, max.	20
— Number of monitored items, recommended max.	50 000; for 1 s sampling interval and 1 s send interval
— Number of server interfaces, max.	10 of each "Server interfaces" / "Companion specification" type and 20 of the type "Reference namespace"
— Number of nodes for user-defined server interfaces, max.	100 000
● Alarms and Conditions	Yes
— Number of program alarms	400
— Number of alarms for system diagnostics	200
Further protocols	
● MODBUS	Yes; MODBUS TCP
S7 message functions	
Number of login stations for message functions, max.	32
Program alarms	Yes
Number of configurable program messages, max.	10 000
Number of loadable program messages in RUN, max.	5 000
Number of simultaneously active program alarms	1 000
● Number of program alarms	1 000
● Number of alarms for system diagnostics	200
● Number of alarms for motion technology objects	780
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 10 engineering systems
Status block	Yes; up to 8 simultaneously
Single step	No
Number of breakpoints	8
Profiling	Yes
Status/control	
● Status/control variable	Yes
● Variables	Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters
● Number of variables, max.	
— of which status variables, max.	200; per job
— of which control variables, max.	200; per job
Forcing	
● Forcing	Yes
● Forcing, variables	Peripheral inputs/outputs
● Number of variables, max.	200
Diagnostic buffer	
● present	Yes
● Number of entries, max.	1 000
— of which powerfail-proof	300
Traces	
● Number of configurable Traces	4
● Memory size per trace, max.	512 kbyte

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Interrupts/diagnostics/status information	
Diagnostics indication LED	
● RUN/STOP LED	Yes; HW LED of SIMATIC IPC BX39A, IPC BX59A
● ERROR LED	Yes; HW LED of SIMATIC IPC BX39A, IPC BX59A
● MAINT LED	Yes; HW LED of SIMATIC IPC BX39A, IPC BX59A
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
● Number of available Motion Control resources for technology objects	9 600
● 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
● Positioning axis	
— Number of positioning axes at motion control cycle of 4 ms (typical value)	280
— Number of positioning axes at motion control cycle of 8 ms (typical value)	384
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
Security	
signed firmware update	Yes
securely removing data	Yes
Hardware requirement	
Hardware required	BX59A - BX/PX39A
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
Storage	
● 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	1 360 Mbyte
Operating systems	
Runs under operating system	
● Windows 10	Yes; Windows 10 IoT Enterprise 2021 LTSC, 64-bit, MUI
● Windows 11	Yes; Windows 11 IoT Enterprise 2024 LTSC
● Linux	No

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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; device-wide and centralized
● Number of users	100
● Number of groups	100
● Number of roles	50
Cycle time monitoring	
● lower limit	adjustable minimum cycle time
● upper limit	adjustable maximum cycle time
Open Development interfaces	
● Size of ODK SO file, max.	9.8 Mbyte

Classifications

	Version	Classification
eClass	16	27-24-06-03
eClass	14	27-24-06-03
eClass	12	27-24-06-03
eClass	9.1	27-24-06-03
eClass	9	27-24-06-03
eClass	8	27-24-06-03
eClass	7.1	27-24-06-03
eClass	6	27-24-06-03
ETIM	10	EC002633
ETIM	9	EC002633
ETIM	8	EC002633
ETIM	7	EC002633

Approvals / Certificates

General Product Approval

Manufacturer Declaration

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