S7-1500/S7-1500F
Technical Data

Standard CPUs			
	CPU 1511-1 PN	CPU 1513-1 PN	CPU 1515-2 PN
Type	Standard CPU	Standard CPU	Standard CPU
Dimensions	35 x 147 x 129 mm	35 x 147 x 129 mm	70 x 147 x 129 mm
Spare part availability after product discontinuation	10 years	10 years	10 years
Temperature range	0 ... 60 °C	0 ... 60 °C	0 ... 60 °C
Display			
Screen diagonal	3.45 cm	3.45 cm	6.1 cm
Command execution time			
Bit operation	0.06 µs	0.04 µs	30 ns
Word operation	0.072 µs	0.048 µs	36 ns
Fixed-point operation	0.096 µs	0.064 µs	48 ns
Floating-point operation	0.384 µs	0.256 µs	192 ns
Memory			
Work memory	150 KB for program 1 MB for data	300 KB for program 1.5 MB for data	500 KB for program 3 MB for data
Load memory/mass storage, max.	32 GB (via SIMATIC memory card)	32 GB (via SIMATIC memory card)	32 GB (via SIMATIC memory card)
Backup, max.	Program on SIMATIC memory card (maintenance-free)	Program on SIMATIC memory card (maintenance-free)	Program on SIMATIC memory card (maintenance-free)
I/O			
I/O address area, max.	32/32 KB	32/32 KB	32/32 KB
Process image	32 KB	32 KB	32 KB
Digital channels	262 144	262 144	262 144
Analog channels	16 384	16 384	16 384
Centralized			
• I/O integrated in CPU	No	No	No
• I/O modules on CPU	Yes	Yes	Yes
Distributed			
• I/O modules on PROFIBUS	Yes (via CM)	Yes (via CM)	Yes (via CM)
• I/O modules on PROFINET	Yes	Yes	Yes
Bit memories, timers, counters, blocks			
Bit memories	16 KB	16 KB	16 KB
S7 timers	2048	2048	2048
S7 counters	2048	2048	2048
IEC timers/counters	Yes	Yes	Yes
Number of elements[1]	2000	2000	6000

[1] In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements.

S7-1500/S7-1500F
Technical Data

Standard CPUs			
	CPU 1511-1 PN	**CPU 1513-1 PN**	**CPU 1515-2 PN**
Data blocks number range	1 - 60999	1 - 60999	1 - 60999
Data blocks (size)	1 MB	1.5 MB	3 MB
Technology functions			
Loadable function blocks	Yes	Yes	Yes
Basic functions integrated in CPU	Yes	Yes	Yes
Special modules, plugged in centrally	Yes	Yes	Yes
Special technology controllers	–	–	–
Isochronous mode	Yes	Yes	Yes
IRT	Yes	Yes	Yes
Safety/availability			
Fail-safety	–	–	–
Fault tolerance	–	–	–
Engineering			
Configuration / programming software	from STEP 7 V12	from STEP 7 V12	from STEP 7 V13
Programming languages	LAD, FBD, STL, S7-SCL, S7-GRAPH	LAD, FBD, STL, S7-SCL, S7-GRAPH	LAD, FBD, STL, S7-SCL, S7-GRAPH
Communication			
PtP	Yes (via CM)	Yes (via CM)	Yes (via CM)
AS interface	–	–	–
PROFIBUS	Yes (via CM)	Yes (via CM)	Yes (via CM)
PROFINET IO	1 x (2-port switch)	1 x (2-port switch)	1 x (2-port switch)
Others integrated	–	–	1 × PROFINET, e.g. for network separation
Web server	Yes	Yes	Yes
Article No. group: 6ES7	511-1AK…	513-1AL…	515-2AM…

S7-1500/S7-1500F
Technical Data

Standard CPUs			
	CPU 1516-3 PN/DP	**CPU 1517-3 PN/DP**	**CPU 1518-4 PN/DP**
Type	Standard CPU	Standard CPU	Standard CPU
Dimensions	70 x 147 x 129 mm	175 x 147 x 129 mm	175 x 147 x 129 mm
Spare part availability after product discontinuation	10 years	10 years	10 years
Temperature range	0 ... 60 ℃	0 ... 60 ℃	0 ... 60 ℃
Display			
Screen diagonal	6.1 cm	6.1 cm	6.1 cm
Command execution time			
Bit operation	10 ns	2 ns	1 ns
Word operation	12 ns	3 ns	2 ns
Fixed-point operation	16 ns	3 ns	2 ns
Floating-point operation	64 ns	12 ns	6 ns
Memory			
Work memory	1 MB for program 5 MB for data	2 MB for program 8 MB for data	4 MB for program 20 MB for data
Load memory/mass storage, max.	32 GB (via SIMATIC memory card)	32 GB (via SIMATIC memory card)	32 GB (via SIMATIC memory card)
Backup, max.	Program on SIMATIC memory card (maintenance-free)	Program on SIMATIC memory card (maintenance-free)	Program on SIMATIC memory card (maintenance-free)
I/O			
I/O address area, max.	32/32 KB	32/32 KB	32/32 KB
Process image	32 KB	32 KB	32 KB
Digital channels	262 144	262 144	262 144
Analog channels	16 384	16 384	16 384
Centralized			
• I/O integrated in CPU	No	No	No
• I/O modules on CPU	Yes	Yes	Yes
Distributed			
• I/O modules on PROFIBUS	Yes	Yes	Yes
• I/O modules on PROFINET	Yes	Yes	Yes
Bit memories, timers, counters, blocks			
Bit memories	16 KB	16 KB	16 KB
S7 timers	2048	2048	2048
S7 counters	2048	2048	2048

S7-1500/S7-1500F
Technical Data

Standard CPUs			
	CPU 1516-3 PN/DP	**CPU 1517-3 PN/DP**	**CPU 1518-4 PN/DP**
IEC timers/counters	Yes	Yes	Yes
Number of elements[1]	6000	10 000	10 000
Data blocks number range	1 - 60999	1 - 60999	1 - 60999
Data blocks (size)	5 MB	8 MB	10 MB
Technology functions			
Loadable function blocks	Yes	Yes	Yes
Basic functions integrated in CPU	Yes	Yes	Yes
Special modules, plugged in centrally	Yes	Yes	Yes
Special technology controllers	–	–	–
Isochronous mode	Yes	Yes	Yes
IRT	Yes	Yes	Yes
Safety/availability			
Fail-safety	–	–	–
Fault tolerance	–	–	–
Engineering			
Configuration / programming software	from STEP 7 V12	from STEP 7 V13	from STEP 7 V13 UPD 3
Programming languages	LAD, FBD, STL, S7-SCL, S7-GRAPH	LAD, FBD, STL, S7-SCL, S7-GRAPH	LAD, FBD, STL, S7-SCL, S7-GRAPH
Communication			
PtP	Yes (via CM)	Yes (via CM)	Yes (via CM)
AS interface	–	–	–
PROFIBUS	1 x PB	1 x PB	1 x PB
PROFINET IO	1 x (2-port switch)	1 x (2-port switch)	1 x (2-port switch)
Others integrated	1 × PROFINET, e.g. for network separation	1 × PROFINET, e.g. for network separation	2 × PROFINET, e.g. for network separation
Web server	Yes	Yes	Yes
Article No. group: 6ES7	516-3AN...	517-3AP	518-4AP...

[1] In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements.

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Technical Data

Compact CPUs		
	CPU 1511C-1 PN	**CPU 1512C-1 PN**
Type	Compact CPU	Compact CPU
Dimensions	85 x 147 x 129 mm	110 x 147 x 129 mm
Spare part availability after product discontinuation	10 years	10 years
Temperature range	0 ... 60 °C	0 ... 60 °C
Display		
Screen diagonal	3.45 cm	3.45 cm
Command execution time		
Bit operation	0.06 µs	0.048 µs
Word operation	0.072 µs	0.058 µs
Fixed-point operation	0.096 µs	0.077 µs
Floating-point operation	0.384 µs	0.307 µs
Memory		
Work memory	175 KB for program 1 MB for data	250 KB for program 1 MB for data
Load memory/mass storage, max.	32 GB (via SIMATIC memory card)	32 GB (via SIMATIC memory card)
Backup, max.	Program on SIMATIC memory card (maintenance-free)	Program on SIMATIC memory card (maintenance-free)
I/O		
I/O address area, max.	32/32 KB	32/32 KB
Process image	32 KB	32 KB
Digital channels	262 144	262 144
Analog channels	16 384	16 384
Centralized		
• I/O integrated in CPU	16 DI, 16 DO, 5 AI, 2 AO	32 DI, 32 DO, 5 AI, 2 AO
• I/O modules on CPU	Yes	Yes
Distributed		
• I/O modules on PROFIBUS	Yes (via CM)	Yes (via CM)
• I/O modules on PROFINET	Yes	Yes
Bit memories, timers, counters, blocks		
Bit memories	16 KB	16 KB
S7 timers	2048	2048
S7 counters	2048	2048
IEC timers/counters	Yes	Yes

S7-1500/S7-1500F
Technical Data

Compact CPUs		
	CPU 1511C-1 PN	**CPU 1512C-1 PN**
Number of elements[1]	2000	2000
Data blocks number range	1 - 60999	1 - 60999
Data blocks (size)	1 MB	1 MB
Technology functions		
Loadable function blocks	Yes	Yes
Basic functions integrated in CPU	Yes	Yes
Special modules, plugged in centrally	Yes	Yes
Special technology controllers	–	–
Isochronous mode	Yes	Yes
IRT	Yes	Yes
Safety/availability		
Fail-safety	–	–
Fault tolerance	–	–
Engineering		
Configuration / programming software	from STEP 7 V13 SP1	from STEP 7 V13 SP1
Programming languages	LAD, FBD, STL, S7-SCL, S7-GRAPH	LAD, FBD, STL, S7-SCL, S7-GRAPH
Communication		
PtP	Yes (via CM)	Yes (via CM)
AS interface	–	–
PROFIBUS	Yes (via CM)	Yes (via CM)
PROFINET IO	1 x (2-port switch)	1 x (2-port switch)
Others integrated	–	–
Web server	Yes	Yes
Article No. group: 6ES7	511-1CK...	512-1CK...

[1] In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements.

S7-1500/S7-1500F
Technical Data

Failsafe CPUs			
	CPU 1511F-1 PN	**CPU 1513F-1 PN**	**CPU 1515F-2 PN**
Type	failsafe CPU	failsafe CPU	failsafe CPU
Dimensions	35 x 147 x 129 mm	35 x 147 x 129 mm	70 x 147 x 129 mm
Spare part availability after product discontinuation	10 years	10 years	10 years
Temperature range	0 ... 60 °C	0 ... 60 °C	0 ... 60 °C
Display			
Screen diagonal	3,45 cm	3,45 cm	6,1 cm
Command execution time			
Bit operation	60 ns	40 ns	30 ns
Word operation	72 ns	48 ns	36 ns
Fixed-point operation	96 ns	64 ns	48 ns
Floating-point operation	384 ns	256 ns	192 ns
Memory			
Work memory	225 KB for program 1 MB for data	450 KB for program 1,5 MB for data	750 KB for program 3 MB for data
Load memory/mass storage, max.	32 GB (via SIMATIC memory card)	32 GB (via SIMATIC memory card)	32 GB (via SIMATIC memory card)
Backup, max.	Program on SIMATIC memory card (maintenance-free)	Program on SIMATIC memory card (maintenance-free)	Program on SIMATIC memory card (maintenance-free)
I/O			
I/O address area, max.	32 / 32 KB	32 / 32 KB	32 / 32 KB
Process image	32 KB	32 KB	32 KB
Digital channels	262 144	262 144	262 144
Analog channels	16 384	16 384	16 384
Centralized			
• I/O integrated in CPU	No	No	No
• I/O modules on CPU	Yes	Yes	Yes
Distributed			
• I/O modules on PROFIBUS	Yes	Yes	Yes
• I/O modules on PROFINET	Yes	Yes	Yes
Bit memories, timers, counters, blocks			
Bit memories	16 KB	16 KB	16 KB
S7 timers	2048	2048	2048
S7 counters	2048	2048	2048

S7-1500/S7-1500F
Technical Data

Failsafe CPUs			
	CPU 1511F-1 PN	**CPU 1513F-1 PN**	**CPU 1515F-2 PN**
IEC timers/counters	Yes	Yes	Yes
Number of elements[1]	2000	2000	6000
Data blocks number range	1 - 60999	1 - 60999	1 - 60999
Data blocks (size)	1 Mbyte	1,5 Mbyte	3 MB
Technology functions			
Loadable function blocks	Yes	Yes	Yes
Basic functions integrated in CPU	Yes	Yes	Yes
Special modules, plugged in centrally	Yes	Yes	Yes
Special technology controllers	–	–	–
Isochronous mode	Yes	Yes	Yes
IRT	Yes	Yes	Yes
Safety/availability			
Fail-safety	Yes	Yes	Yes
Fault tolerance	–	–	–
Engineering			
Configuration / programming software	from STEP 7 V12	from STEP 7 V12	from STEP 7 V13
Programming languages	LAD, FBD , STL, S7-SCL, S7-GRAPH	LAD, FBD , STL, S7-SCL, S7-GRAPH	LAD, FBD , STL, S7-SCL, S7-GRAPH
Communication			
PtP	Yes (via CM)	Yes (via CM)	Yes (via CM)
AS interface	–	–	–
PROFIBUS	Yes (via CM)	Yes (via CM)	Yes (via CM)
PROFINET IO	1 x (2-port switch)	1 x (2-port switch)	1 x (2-port switch)
Others integrated	–	–	1 x PROFINET, e.g. for network separation
Web server	Yes	Yes	Yes
Article No.-group 6ES7	511-1FK...	513-1FL...	515-2FM...

[1] In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements.

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Technical Data

Failsafe CPUs			
	CPU 1516F-3 PN/DP	**CPU 1517F-3 PN/DP**	**CPU 1518F-4 PN/DP**
Type	failsafe CPU	failsafe CPU	failsafe CPU
Dimensions	70 x 147 x 129 mm	175 x 147 x 129 mm	175 x 147 x 129 mm
Spare part availability after product discontinuation	10 years	10 years	10 years
Temperature range	0 ... 60 ℃	0 ... 60 ℃	0 ... 60 ℃
Display			
Screen diagonal	6,1 cm	6,1 cm	6,1 cm
Command execution time			
Bit operation	10 ns	2 ns	1 ns
Word operation	12 ns	3 ns	2 ns
Fixed-point operation	16 ns	3 ns	2 ns
Floating-point operation	64 ns	12 ns	6 ns
Memory			
Work memory	1.5 MB for program 5 MB for data	3 MB for program 8 MB for data	6 MB for program 20 MB for data
Load memory/mass storage, max.	32 GB (via SIMATIC memory card)	32 GB (via SIMATIC memory card)	32 GB (via SIMATIC memory card)
Backup, max.	Program on SIMATIC memory card (maintenance-free)	Program on SIMATIC memory card (maintenance-free)	Program on SIMATIC memory card (maintenance-free)
I/O			
I/O address area, max.	32 / 32 KB	32 / 32 KB	32 / 32 KB
Process image	32 KB	32 KB	32 KB
Digital channels	262 144	262 144	262 144
Analog channels	16 384	16 384	16 384
Centralized			
• I/O integrated in CPU	No	No	No
• I/O modules on CPU	Yes	Yes	Yes
Distributed			
• I/O modules on PROFIBUS	Yes	Yes	Yes
• I/O modules on PROFINET	Yes	Yes	Yes
Bit memories, timers, counters, blocks			
Bit memories	16 KB	16 KB	16 KB
S7 timers	2048	2048	2048
S7 counters	2048	2048	2048

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Technical Data

Failsafe CPUs			
	CPU 1516F-3 PN/DP	**CPU 1517F-3 PN/DP**	**CPU 1518F-4 PN/DP**
IEC timers/counters	Yes	Yes	Yes
Number of elements[1]	6000	10 000	10 000
Data blocks number range	1 - 60999	1 - 60999	1 - 60999
Data blocks (size)	5 MB	8 MB	10 MB
Technology functions			
Loadable function blocks	Yes	Yes	Yes
Basic functions integrated in CPU	Yes	Yes	Yes
Special modules, plugged in centrally	Yes	Yes	Yes
Special technology controllers	–	–	–
Isochronous mode	Yes	Yes	Yes
IRT	Yes	Yes	Yes
Safety/availability			
Fail-safety	Yes	Yes	Yes
Fault tolerance	–	–	–
Engineering			
Configuration / programming software	from STEP 7 V12	from STEP 7 V13	from STEP 7 V13 UPD 3
Programming languages	LAD, FBD , STL, S7-SCL, S7-GRAPH	LAD, FBD , STL, S7-SCL, S7-GRAPH	LAD, FBD , STL, S7-SCL, S7-GRAPH
Communication			
PtP	Yes (via CM)	Yes (via CM)	Yes (via CM)
AS interface	–	–	–
PROFIBUS	1 x PB	1 x PB	1 x PB
PROFINET IO	1 x (2-port switch)	1 x (2-port switch)	1 x (2-port switch)
Others integrated	1 x PROFINET, e.g. for network separation	1 x PROFINET, e.g. for network separation	2 x PROFINET, e.g. for network separation
Web server	Yes	Yes	Yes
Article No.-group 6ES7	516-3FN…	517-3FP…	518-4FP…

[1] In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements.

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Technical Data

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