SIEMENS

Data sheet

6ES7515-2AM00-0AB0



SIMATIC S7-1500, CPU 1515-2 PN, CENTRAL PROCESSING UNIT WITH WORKING MEMORY 500 KB FOR PROGRAM AND 3 MB FOR DATA, 1. INTERFACE, PROFINET IRT WITH 2 PORT SWITCH, 2. INTERFACE, ETHERNET, 30 NS BIT-PERFORMANCE, SIMATIC MEMORY CARD NECESSARY

Product type designation	
General information	
HW functional status	FS02
Firmware version	V1.8
Engineering with	
 STEP 7 TIA Portal configurable/integrated as of version 	V13 SP1 Update 4
Configuration control	
via dataset	Yes
Display	
Screen diagonal (cm)	6.1 cm
Control elements	
Number of keys	6
Mode selector switch	1
Supply voltage	
Type of supply voltage	24 V DC
permissible range, lower limit (DC)	19.2 V

Reverse polarity protection Wains buffering Mains function Mains wortage failure stored energy time Mains function (rated value) O.8 A Incush current, max. 2.4 A; Rated value Per O.02 A*s Over Power consumption from the backplane bus (balanced) Infeed power to the backplane bus (balanced) Infeed power to the backplane bus (balanced) Infeed power to the backplane bus (balanced) Mover loss Power loss, typ. 6.3 W Mork memory SilkMATIC Memory Card required Work memory Infegrated (for program) Infegrated (for program) Infegrated (for data) Infeed power to the backplane bus Infeed power	permissible range, upper limit (DC)	28.8 V
Mains buffering • Mains/voltage failure stored energy time • Mains/voltage failure stored energy time Durrent consumption (rated value) Ou. 8 A Incush current, max. 2.4 A; Rated value Ou. 2 A*s Over Power consumption from the backplane bus (balanced) Intered power to the backplane bus 12 W Over loss Power loss, typ. 6.3 W Intered power loss, typ. Intered power loss typ. Intered power loss typ. Intered power loss, typ. Intered power loss		
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Power consumption from the backplane bus (balanced) Infeed power to the backplane bus 12 W ower loss Power loss, typ. 6.3 W Image: I	Current consumption (rated value)	0.8 A
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Power consumption from the backplane bus (balanced) Infeed power to the backplane bus 12 W over loss Power loss, typ. 6.3 W lemory SIMATIC Memory Card required Work memory • integrated (for program) • integrated (for data) 13 Mbyte Load memory • Plug-in (SIMATIC Memory Card), max. 32 Gbyte Backup • maintenance-free PU processing times for bit operations, typ. 30 ns for word operations, typ. 36 ns for fixed point arithmetic, typ. 48 ns for floating point arithmetic, typ. 48 ns for floating point arithmetic, typ. 192 ns PU-blocks Number of elements (total) 6 000; in addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements DB • Number range • Number range • Size, max. 3 Mbyte • Number range • Size, max. 500 kbyte	l²t	0.02 A²·s
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Power loss Power loss, typ. 6.3 W SIMATIC Memory Card required Yes Work memory • integrated (for program) • integrated (for data) Load memory • Plug-in (SIMATIC Memory Card), max. 32 Gbyte Backup • maintenance-free Yes PU processing times for bit operations, typ. for fixed point arithmetic, typ. 48 ns for floating point arithmetic, typ. 192 ns PU-blocks Number of elements (total) • Number range • Nimber range • Size, max. 6.3 W Yes Sook byte 5.3 W Sook byte 5.3 W Sook byte 6.3 W Sook byte 5.3 W So	(balanced)	
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PU processing times for bit operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. PU-blocks Number of elements (total) Number range Number range Size, max. Number range Number range Number range Number range Number range Number range Size, max. Number range	Load memory	
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for fixed point arithmetic, typ. 48 ns for floating point arithmetic, typ. 192 ns PU-blocks Number of elements (total) 6 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements DB Number range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB Number range Number range Size, max. 500 kbyte	for word operations, typ.	36 ns
FOR FOUND FOR		48 ns
Number of elements (total) 6 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements DB Number range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB Number range Number range 0 65 535 Size, max. 500 kbyte	for floating point arithmetic, typ.	192 ns
Number of elements (total) 6 000; In addition to blocks such as DBs, FBs and FCs, UDTs, global constants, etc. are also regarded as elements DB Number range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB Number range Number range O 65 535 Size, max. 500 kbyte	CDI I blocks	
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 Number range 1 60 999; subdivided into: number range that can be used by the user: 1 59 999, and number range of DBs created via SFC 86: 60 000 60 999 Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB Number range 0 65 535 Size, max. 500 kbyte 	ramber of distriction (total)	
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DB is 64 KB FB ● Number range ● Size, max. DB is 64 KB 0 65 535 500 kbyte	Number range	the user: 1 59 999, and number range of DBs created via SFC
● Number range 0 65 535 ● Size, max. 500 kbyte	● Size, max.	
• Size, max. 500 kbyte	FB	
	Number range	0 65 535
FC	• Size, max.	500 kbyte
	FC	

Number range	0 65 535
● Size, max.	500 kbyte
OB	
• Size, max.	500 kbyte
Number of free cycle OBs	100
Number of time alarm OBs	20
Number of delay alarm OBs	20
 Number of cyclic interrupt OBs 	20
 Number of process alarm OBs 	50
Number of DPV1 alarm OBs	3
 Number of isochronous mode OBs 	1
Number of technology synchronous alarm 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
Counters, timers and their retentivity S7 counter	
Number	2 048
Retentivity	
— adjustable	Yes
IEC counter	
• Number	Any (only limited by the main memory)
Retentivity	
— can be set	Yes
S7 times	
Number	2 048
Retentivity	
— can be set	Yes
IEC timer	
• Number	Any (only limited by the main memory)
Retentivity	v.
— adjustable	Yes
Data areas and their retentivity	
retentive data area in total (incl. times, counters,	512 kbyte; In total; available retentive memory for bit memories,
flags), max.	timers, counters, DBs, and technology data (axes): 472 KB
Flag	
Flag ● Number, max.	16 kbyte

 Number of clock memories 	8; es sind 8 Taktmerkerbits, zusammengefasst in einem Taktmerkerbyte
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
per integrated IO subsystem	
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
per CM/CP	•
— Inputs (volume)	8 kbyte
— Outputs (volume)	8 kbyte
Subprocess images	
Number of subprocess images, max.	32
Hardware configuration Number of hierarchical IO systems	20
Number of fileratchical to systems	20
Number of DP masters	
Number of DP masters	8: A maximum of 8 CMs/CPs (PROFIBLIS PROFINET Ethernet)
Number of DP masters • Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
	•
● Via CM	•
Via CM Number of IO Controllers	can be inserted in total
Via CMNumber of IO Controllersintegrated	can be inserted in total
Via CMNumber of IO Controllersintegrated	can be inserted in total 1 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet)
Via CMNumber of IO Controllersintegratedvia CM	can be inserted in total 1 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet)
 Via CM Number of IO Controllers integrated via CM Rack	1 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
 Via CM Number of IO Controllers integrated via CM Rack Modules per rack, max. 	1 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total 32; CPU + 31 modules
 Via CM Number of IO Controllers integrated via CM Rack Modules per rack, max. Rack, number of rows, max. 	1 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total 32; CPU + 31 modules 1 the number of connectable PtP CMs is only limited by the number
 Via CM Number of IO Controllers integrated via CM Rack Modules per rack, max. Rack, number of rows, max. 	1 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total 32; CPU + 31 modules 1
 Via CM Number of IO Controllers integrated via CM Rack Modules per rack, max. Rack, number of rows, max. 	1 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total 32; CPU + 31 modules 1 the number of connectable PtP CMs is only limited by the number
 Via CM Number of IO Controllers integrated via CM Rack Modules per rack, max. Rack, number of rows, max. PtP CM Number of PtP CMs 	1 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total 32; CPU + 31 modules 1 the number of connectable PtP CMs is only limited by the number
 Via CM Number of IO Controllers integrated via CM Rack Modules per rack, max. Rack, number of rows, max. PtP CM Number of PtP CMs Time of day	1 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total 32; CPU + 31 modules 1 the number of connectable PtP CMs is only limited by the number
Number of IO Controllers integrated via CM Rack Modules per rack, max. Rack, number of rows, max. PtP CM Number of PtP CMs Time of day Clock	1 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total 32; CPU + 31 modules 1 the number of connectable PtP CMs is only limited by the number of available slots
 Via CM Number of IO Controllers integrated via CM Rack Modules per rack, max. Rack, number of rows, max. PtP CM Number of PtP CMs Time of day Clock Type 	1 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total 32; CPU + 31 modules 1 the number of connectable PtP CMs is only limited by the number of available slots Hardware clock
 Via CM Number of IO Controllers integrated via CM Rack Modules per rack, max. Rack, number of rows, max. PtP CM Number of PtP CMs Time of day Clock Type Deviation per day, max. 	1 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total 32; CPU + 31 modules 1 the number of connectable PtP CMs is only limited by the number of available slots Hardware clock 10 s; Typ.: 2 s
 Via CM Number of IO Controllers integrated via CM Rack Modules per rack, max. Rack, number of rows, max. PtP CM Number of PtP CMs Time of day Clock Type Deviation per day, max. Backup time 	1 8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total 32; CPU + 31 modules 1 the number of connectable PtP CMs is only limited by the number of available slots Hardware clock 10 s; Typ.: 2 s

Clock synchronization	
• supported	Yes
• in AS, master	Yes
• in AS, slave	Yes
on Ethernet via NTP	Yes
• On Ethernet via NTP	165
Interfaces	
Number of PROFINET interfaces	2
1. Interface	
Interface types	
— Number of ports	2
integrated switch	Yes
— RJ 45 (Ethernet)	Yes; X1
Protocols	
— PROFINET IO Controller	Yes
— PROFINET IO Device	Yes
 — SIMATIC communication 	Yes
— Open IE communication	Yes
— Web server	Yes
— Media redundancy	Yes
2. Interface	
Interface types	
— Number of ports	1
— integrated switch	No
— RJ 45 (Ethernet)	Yes; X2
Protocols	
— PROFINET IO Controller	No
— PROFINET IO Device	No
 — SIMATIC communication 	Yes
— Open IE communication	Yes
— Web server	Yes
lake who are to make	
Interface types RJ 45 (Ethernet)	
• 100 Mbps	Yes
Autonegotiation	Yes
Autoriegotiation Autocrossing	Yes
Industrial Ethernet status LED	Yes
- mausurar Ethernet Status LED	. 50
Protocols	
Number of connections	
Number of connections, max.	192; via integrated interfaces of the CPU and connected CPs / CMs

 Number of connections reserved for ES/HMI/web 	10
 Number of connections via integrated interfaces 	108
Number of S7 routing paths	16
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	Yes
— Open IE communication	Yes
— IRT	Yes
— MRP	Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50
— PROFlenergy	Yes
 Prioritized startup 	Yes; Max. 32 PROFINET devices
 Number of connectable IO Devices, max. 	256; In total, up to 512 distributed I/O devices can be connected via PROFIBUS or PROFINET
 of which IO devices with IRT and "high performance" option, max. 	64
— Number of connectable IO Devices for RT,	256
max.	
— of which in line, max.	256
 Number of IO Devices that can be 	8
simultaneously activated/deactivated, max.	
— 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
with 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
With IRT	
— 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
 for IRT with the "high performance" option and parameter assignment for so-called "odd- 	Update time = set "odd" send clock (any multiple of 125 μ s: 375 μ s, 625 μ s 3 875 μ s)

numbered" send cycles

PROFINET IO Device	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	Yes
— MRP	Yes
— PROFlenergy	Yes
— Shared device	Yes
 Number of IO Controllers with shared 	4
device, max.	
SIMATIC communication	
 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.	1 472 byte
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Web server	
• HTTP	Yes; Standard and user-defined pages
• HTTPS	Yes; Standard and user-defined pages
Further protocols	
• MODBUS	Yes; MODBUS TCP
Media redundancy	
 Switchover time on line break, typ. 	200 ms
Number of stations in the ring, max.	50
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes; With minimum OB 6x cycle of 500 µs
Equidistance	Yes

S7 message functions	
Number of login stations for message functions, max.	32
Block related messages	Yes
Number of configurable alarms, max.	10 000
Number of simultaneously active alarms in alarm pool	
 Number of reserved user alarms 	600
 Number of reserved alarms for system diagnostics 	200
 Number of reserved alarms for motion technology objects 	160
Test commissioning functions	
Joint commission (Team Engineering)	Yes; Parallel online access possible for up to 8 engineering systems
Status block	Yes; Up to 8 simultaneously (in total across all ES clients)
Single step	No
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, variables	Peripheral inputs/outputs
Number of variables, max.	200
Diagnostic buffer	
• present	Yes
Number of entries, max.	3 200
— of which powerfail-proof	500
Traces	
Number of configurable Traces	4; Up to 512 KB of data per trace are possible
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
 Connection display LINK TX/RX 	Yes
supported technology objects	
Motion	Yes
Speed-controlled axis	

 Number of speed-controlled axes, max. 	30; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
Positioning axis	
 Number of positioning axes, max. 	30; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
 Synchronized axes (relative gear 	
synchronization)	
— Number of axes, max.	15; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
External encoders	
 Number of external encoders, max. 	30; Requirement: There must be no other motion technology objects created; note: The number of axes affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
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

Ambient conditions	
Ambient temperature during operation	
horizontal installation, min.	0 °C
• horizontal installation, may	60 °C: Display: 50 °C at an operating temperature of typ

horizontal installation, max.
 60 °C; Display: 50 °C, at an operating temperature of typically 50
 °C, the display is switched off

• vertical installation, min. 0 °C

• vertical installation, max.

40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the display is switched off

Configuration		
Programming		
Programming language		
— LAD	Yes	
— FBD	Yes	
— STL	Yes	
— SCL	Yes	
— GRAPH	Yes	
Know-how protection		
User program protection	Yes	
 Copy protection 	Yes	
 Block protection 	Yes	
Access protection		

 Password for display 	Yes
 Protection level: Write protection 	Yes
 Protection level: Read/write protection 	Yes
 Protection level: Complete protection 	Yes
Cycle time monitoring	
• lower limit	adjustable minimum cycle time
• upper limit	adjustable maximum cycle time
Dimensions	
Dimensions Width	70 mm
	70 mm 147 mm
Width	
Width Height Depth	147 mm
Width Height	147 mm
Width Height Depth	147 mm

29.07.2015

last modified: