SIEMENS

Data sheet

6ES7515-2RN03-0AB0

SIMATIC S7-1500R, CPU 1515R-2 PN central processing unit with work memory 1 MB for program and 4.5 MB for data, 1st interface: PROFINET RT with 2-port switch, 2nd interface: PROFINET, SIMATIC Memory Card required **** approvals and certificate according to entry 109815625 at support.industry.siemens.com to be observed! *****

General information	
Product type designation	CPU 1515R-2 PN
HW functional status	FS01
Firmware version	V3.0
Product function	
	Yes; I&M0 to I&M3
Isochronous mode	No
Engineering with	
STEP 7 TIA Portal configurable/integrated from	STEP 7 V18 or higher
version	
Display	
Screen diagonal [cm]	6.1 cm
Control elements	
Number of keys	8
Mode buttons	2
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	
 Mains/voltage failure stored energy time 	5 ms
Repeat rate, min.	1/s
Input current	
Current consumption (rated value)	0.83 A
Current consumption, max.	0.88 A
Inrush current, max.	1.15 A
l²t	0.6 A ² ·s
Power loss	
Power loss, typ.	7.9 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
integrated (for program)	1 Mbyte
• integrated (for data)	4.5 Mbyte
Load memory	
 Plug-in (SIMATIC Memory Card), max. 	32 Gbyte
Backup	
maintenance-free	Yes
CPU processing times	
for bit operations, typ.	20 ns
for word operations, typ.	24 ns
for fixed point arithmetic, typ.	32 ns
for floating point arithmetic, typ.	128 ns
CPU-blocks	
Number of elements (total)	8 000; Blocks (OB, FB, FC, DB) and UDTs
DB	Number range: 1 to 59 999
Number range	

• Size, max.	4.5 Mbyte; For non-optimized block accesses, the max. size of the DB is $64\ \mathrm{KB}$
FB	0. 05 505
Number range	0 65 535
• Size, max.	1 Mbyte
 Number range 	0 65 535
Size, max.	1 Mbyte
OB	
• Size, max.	1 Mbyte
 Number of free cycle OBs 	100
 Number of time alarm OBs 	20
 Number of delay alarm OBs 	20
 Number of cyclic interrupt OBs 	20; with minimum OB 3x cycle of 10 ms
 Number of process alarm OBs 	50
 Number of DPV1 alarm OBs 	3
 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	2 0 10
— adjustable	Yes
IEC counter	100
Number	Any (only limited by the main memory)
Retentivity	Any (only limited by the main memory)
— adjustable	Yes
S7 times	163
Number	2 048
Retentivity	2 040
— adjustable	Yes
IEC timer	163
Number	Any (only limited by the main memory)
Retentivity	Any (only limited by the main memory)
— adjustable	Yes
	165
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	512 kbyte; Available retentive memory for bit memories, timers, counters, DBs, and technology data (axes): 472 KB
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	4 096; 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
Subprocess images	
Number of subprocess images, max.	32
Hardware configuration	1
Number of distributed IO systems	1
Number of IO Controllers	

a integrated	1
integrated Rack	1
Modules per rack, max.	1; CPU
Time of day	1, 01 0
Clock	
• Type	Hardware clock
Backup time	6 wk; At 40 °C ambient temperature, typically
Deviation per day, max.	10 s; Typ.: 2 s
Operating hours counter	
Number	16
Clock synchronization	
• supported	Yes
 on Ethernet via NTP 	Yes
Interfaces	
Number of PROFINET interfaces	2
1. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; X1
 Number of ports 	2
integrated switch	Yes
Protocols	
IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET IO Device NAATIO as assumination.	No Year Only Consum
SIMATIC communication Open IF communication	Yes; Only Server
Open IE communication Web conver	Yes No
Web server Modia redundancy	Yes
Media redundancy PROFINET IO Controller	100
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— IRT	No
— PROFlenergy	Yes
 Number of connectable IO Devices, max. 	64
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
Update time for RT	quantity of configured user data
— for send cycle of 1 ms	1 ms to 512 ms
	1 1115 to 312 1115
2. Interface types	
Interface types • R I 45 (Ethernet)	Vas. X2
RJ 45 (Ethernet)Number of ports	Yes; X2 1
integrated switch	No
Protocols	
• IP protocol	Yes; IPv4
PROFINET IO Controller	No
PROFINET IO Device	No
 SIMATIC communication 	Yes; Only Server
 Open IE communication 	Yes
Web server	No
Media redundancy	No
Interface types	
RJ 45 (Ethernet)	
• 100 Mbps	Yes
 Autonegotiation 	Yes
 Autocrossing 	Yes
Industrial Ethernet status LED	Yes
Protocols	
PROFIsafe	No
Number of connections	
Number of connections, max.	128

Number of Connections reserved for ES/HMI/web Number of S7 routing paths PROFINET system redundancy (S2) PROFINET system redundancy (R1) Media redundancy - MRP - MRP - MRP interconnection, supported - MRPD - Switchover time on line break, typ Number of stations in the ring, max. SIMATIC communication PG/OP communication S7 routing S7 communication, as server S7 communication, as client Open IE communication TCP/IP - Data length, max several passive connections per port, supported SISO-on-TCP (RFC1006) - Data length, max UDP multicast - UDP multicast - UDP multicast - DNS - SNMP - DNS - SNMP - DCP - LLDP - HTTP - HTTP - HTTP - HTTP - HTTP - HTTP - ONC - MRP Automanager according to IEC 62439-2 Edition 2.0 - Yes; as MRP ring node according to I	
Redundancy mode PROFINET system redundancy (S2) PROFINET system redundancy (R1) Media redundancy - MRP	
PROFINET system redundancy (S2) PROFINET system redundancy (R1) Media redundancy - MRP MRP interconnection, supported MRP interconnection intering, max. Simatic communication PG/OP communication PG/OP communication Strouting Strouti	
PROFINET system redundancy Media redundancy — MRP — MRP — MRP interconnection, supported — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max. SIMATIC communication PG/OP communication PG/OP communication PG/OP communication, as server ST communication, as server ST communication PCP/IP — Data length, max. — several passive connections per port, supported ISO-on-TCP (RFC1006) — Data length, max. — UDP — Data length, max. — UDP multicast PD/CP DNS SNMP DCP DNS SNMP PCP PUTTE NO NO NO NO NO NO NO NO NO N	
Media redundancy - MRP - MRP interconnection, supported - MRPD - Switchover time on line break, typ Number of stations in the ring, max. SIMATIC communication • PG/OP communication • S7 routing • S7 communication, as server • S7 communication • TCP/IP - Data length, max several passive connections per port, supported • ISO-on-TCP (RFC1006) - Data length, max UDP - Data length, max UDP multicast • DHCP • DNS • SMMP • DCP • SMMP • DCP • LLDP Web server • HTTP • HTTPS No Yes; as MRP Automanager according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; and RP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 2.0 Yes; and recommended, however	
- Switchover time on line break, typ Number of stations in the ring, max. SIMATIC communication • PG/OP communication • PG/OP communication • S7 routing • S7 communication, as server • S7 communication, as client Open IE communication • TCP/IP - Data length, max several passive connections per port, supported • ISO-on-TCP (RFC1006) - Data length, max UDP - Data length, max UDP - Data length, max S2 kbyte; 1 472 bytes for UDP broadcast - UDP multicast • DHCP • DNS • SNMP • DCP • LLDP Web server • HTTP • HTTPS No	
- Number of stations in the ring, max. SIMATIC communication PG/OP communication PG/OP communication PS7 routing S7 routing PS7 communication, as server S7 communication, as client Open IE communication TCP/IP Data length, max. Several passive connections per port, supported ISO-on-TCP (RFC1006) Data length, max. UDP Data length, max. UDP Data length, max. S4 kbyte Poata length, max. Wes S4 kbyte Pobla length, max. Wes S4 kbyte Pobla length, max. Wes S5, max. 118 multicast circuits DHCP No DNS SNMP Pes LLDP Yes LLDP Web server HTTP No No	
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supported 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. 118 multicast circuits DHCP No DNS Yes SNMP Yes DCP Yes LLDP Yes Web server HTTP HTTPS No	
 ISO-on-TCP (RFC1006) — Data length, max. UDP — Data length, max. — Data length, max. — Data length, max. — UDP multicast — UDP multicast — Ves; max. 118 multicast circuits — DHCP — DNS — SNMP — DCP — DCP — LLDP Web server — HTTP — NO NO — NO — HTTPS — NO 	
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 DHCP DNS SNMP DCP LLDP Web server HTTP NO HTTPS No 	
 DNS SNMP DCP LLDP Yes ULDP Web server HTTP HTTPS No 	
 SNMP DCP LLDP Yes Web server HTTP HTTPS No 	
● DCP Yes ● LLDP Yes Web server No ● HTTPS No	
● LLDP Yes Web server No ● HTTP No ● HTTPS No	
Web server ● HTTP No ● HTTPS No	
 ◆ HTTP ◆ HTTPS No 	
• HTTPS No	
OPC UA	
OPC UA Client No	
OPC UA Server No	
Further protocols	
MODBUS Yes; MODBUS TCP	
S7 message functions	
Number of login stations for message functions, max. 64	
Program alarms Yes	
Number of configurable program messages, max. 10 000; Program messages are generated by the "Program_A	arm"
block, ProDiag or GRAPH	
Number of loadable program messages in RUN, max. 5 000	
Number of simultaneously active program alarms	
Number of program alarms 1 000	
Number of alarms for system diagnostics 200	
Test commissioning functions	
Joint commission (Team Engineering) No Status block Vest up to 8 simultaneously	
Status block Yes; up to 8 simultaneously	
Single step No No No No No No No No No N	
Number of breakpoints 8; Breakpoints are only supported in RUN-Solo status	
Status/control	
Status/control variable Yes	
 Variables Inputs/outputs, memory bits, DBs, distributed I/Os, timers, cou 	
Number of variables, max.	nters
— of which status variables, max. 200; per job	nters
— of which control variables, max. 200; per job	nters
Forcing	nters
• Forcing Yes	nters
• Forcing, variables Peripheral inputs/outputs	nters
Number of variables, max. 200	nters
Diagnostic buffer	nters

• present	Yes
Number of entries, max.	3 200
— of which powerfail-proof	500
Traces	
Number of configurable Traces	4
Memory size per trace, max.	512 kbyte
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 Control	No
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	Yes
High-speed counter	No
Ambient conditions	
Ambient temperature during operation	
horizontal installation, min.	-30 °C
horizontal installation, max.	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the
Tionzoniai motaliation, max.	display is switched off
 vertical installation, min. 	-30 °C
 vertical installation, max. 	40 °C; Display: 40 °C, at an operating temperature of typically 40 °C, the
	display is switched off
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
 Installation altitude above sea level, max. 	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
configuration / header	
configuration / programming / header	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— GRAPH	Yes
Know-how protection	
 User program protection/password protection 	
p9 p p	Yes
Copy protection	Yes No
 Copy protection 	No
Copy protectionBlock protection	No
 Copy protection Block protection Access protection protection of confidential configuration data Password for display 	No Yes
Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection	No Yes Yes Yes
 Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection Protection level: Read/write protection 	Yes Yes Yes Yes Yes Yes
 Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection 	No Yes Yes Yes
 Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection programming / cycle time monitoring / header 	Yes Yes Yes Yes Yes Yes Yes Yes
 Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection 	Yes Yes Yes Yes Yes Yes Yes Yes Adjustable minimum cycle time
 Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection programming / cycle time monitoring / header 	Yes Yes Yes Yes Yes Yes Yes Yes
Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection programming / cycle time monitoring / header lower limit	Yes Yes Yes Yes Yes Yes Yes Yes Adjustable minimum cycle time
Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection programming / cycle time monitoring / header lower limit upper limit	Yes Yes Yes Yes Yes Yes Yes Yes Adjustable minimum cycle time
Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Programming / cycle time monitoring / header Iower limit upper limit Dimensions	Yes Yes Yes Yes Yes Yes Yes Yes Adjustable minimum cycle time adjustable maximum cycle time
Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection programming / cycle time monitoring / header lower limit upper limit Dimensions Width	Yes Yes Yes Yes Yes Yes Yes Yes Adjustable minimum cycle time adjustable maximum cycle time
Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Programming / cycle time monitoring / header Iower limit upper limit Dimensions Width Height Depth	Yes Yes Yes Yes Yes Yes Yes Yes Yes Adjustable minimum cycle time adjustable maximum cycle time 70 mm 147 mm
Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Programming / cycle time monitoring / header Iower limit upper limit Dimensions Width Height Depth Weights	Yes Yes Yes Yes Yes Yes Yes Yes Yes On mm 147 mm 129 mm
Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Programming / cycle time monitoring / header Iower limit upper limit Dimensions Width Height Depth	Yes Yes Yes Yes Yes Yes Yes Yes Yes Adjustable minimum cycle time adjustable maximum cycle time 70 mm 147 mm
Copy protection Block protection Access protection protection of confidential configuration data Password for display Protection level: Write protection Protection level: Read/write protection Protection level: Complete protection Programming / cycle time monitoring / header Iower limit upper limit Dimensions Width Height Depth Weights	Yes Yes Yes Yes Yes Yes Yes Yes Yes On mm 147 mm 129 mm