

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	
<ul style="list-style-type: none"> I&M data 	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> Isochronous mode 	No
Engineering with	
<ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated from version 	STEP 7 V18 or higher
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	
<ul style="list-style-type: none"> Mains/voltage failure stored energy time 	5 ms
<ul style="list-style-type: none"> 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
I ² t	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	
<ul style="list-style-type: none"> integrated (for program) 	1 Mbyte
<ul style="list-style-type: none"> integrated (for data) 	4.5 Mbyte
Load memory	
<ul style="list-style-type: none"> Plug-in (SIMATIC Memory Card), max. 	32 Gbyte
Backup	
<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> Number range 	Number range: 1 to 59 999

• Size, max.	4.5 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB
FB	
• Number range	0 ... 65 535
• Size, max.	1 Mbyte
FC	
• 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	
— adjustable	Yes
IEC counter	
• Number	Any (only limited by the main memory)
Retentivity	
— adjustable	Yes
S7 times	
• 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.	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	
Number of distributed IO systems	1
Number of IO Controllers	

• integrated	1
Rack	
• Modules per rack, max.	1; CPU
Time of day	
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	No
• SIMATIC communication	Yes; Only Server
• Open IE communication	Yes
• Web server	No
• Media redundancy	Yes
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— Isochronous mode	No
— IRT	No
— PROFIenergy	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 quantity of configured user data
Update time for RT	
— for send cycle of 1 ms	1 ms to 512 ms
2. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; X2
• Number of ports	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

<ul style="list-style-type: none"> • Number of connections reserved for ES/HMI/web • Number of S7 routing paths 	<p>10 16</p>
Redundancy mode	
<ul style="list-style-type: none"> • PROFINET system redundancy (S2) • PROFINET system redundancy (R1) 	<p>Yes No</p>
Media redundancy	
<ul style="list-style-type: none"> — MRP — MRP interconnection, supported — MRPD — Switchover time on line break, typ. — Number of stations in the ring, max. 	<p>Yes; MRP Automanager according to IEC 62439-2 Edition 2.0 Yes; as MRP ring node according to IEC 62439-2 Edition 3.0 No 200 ms; PROFINET MRP 50; Only 16 are recommended, however</p>
SIMATIC communication	
<ul style="list-style-type: none"> • PG/OP communication • S7 routing • S7 communication, as server • S7 communication, as client 	<p>Yes; encryption with TLS V1.3 pre-selected Yes Yes No</p>
Open IE communication	
<ul style="list-style-type: none"> • TCP/IP <ul style="list-style-type: none"> — Data length, max. — several passive connections per port, supported • ISO-on-TCP (RFC1006) <ul style="list-style-type: none"> — Data length, max. • UDP <ul style="list-style-type: none"> — Data length, max. — UDP multicast • DHCP • DNS • SNMP • DCP • LLDP 	<p>Yes 64 kbyte Yes Yes 64 kbyte Yes Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; max. 118 multicast circuits No Yes Yes Yes Yes Yes</p>
Web server	
<ul style="list-style-type: none"> • HTTP • HTTPS 	<p>No No</p>
OPC UA	
<ul style="list-style-type: none"> • OPC UA Client • OPC UA Server 	<p>No No</p>
Further protocols	
<ul style="list-style-type: none"> • MODBUS 	<p>Yes; MODBUS TCP</p>
S7 message functions	
<p>Number of login stations for message functions, max.</p> <p>Program alarms</p> <p>Number of configurable program messages, max.</p> <p>Number of loadable program messages in RUN, max.</p> <p>Number of simultaneously active program alarms</p> <ul style="list-style-type: none"> • Number of program alarms • Number of alarms for system diagnostics 	<p>64 Yes 10 000; Program messages are generated by the "Program_Alarm" block, ProDiag or GRAPH 5 000 1 000 200</p>
Test commissioning functions	
<p>Joint commission (Team Engineering)</p> <p>Status block</p> <p>Single step</p> <p>Number of breakpoints</p>	<p>No Yes; up to 8 simultaneously No 8; Breakpoints are only supported in RUN-Solo status</p>
Status/control	
<ul style="list-style-type: none"> • Status/control variable • Variables • Number of variables, max. <ul style="list-style-type: none"> — of which status variables, max. — of which control variables, max. 	<p>Yes Inputs/outputs, memory bits, DBs, distributed I/Os, timers, counters 200; per job 200; per job</p>
Forcing	
<ul style="list-style-type: none"> • Forcing • Forcing, variables • Number of variables, max. 	<p>Yes Peripheral inputs/outputs 200</p>
Diagnostic buffer	

<ul style="list-style-type: none"> • present 	Yes
<ul style="list-style-type: none"> • Number of entries, max. 	3 200
<ul style="list-style-type: none"> — of which powerfail-proof 	500
Traces	
<ul style="list-style-type: none"> • Number of configurable Traces 	4
<ul style="list-style-type: none"> • Memory size per trace, max. 	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	
<ul style="list-style-type: none"> • RUN/STOP LED 	Yes
<ul style="list-style-type: none"> • ERROR LED 	Yes
<ul style="list-style-type: none"> • MAINT LED 	Yes
<ul style="list-style-type: none"> • Connection display LINK TX/RX 	Yes
Supported technology objects	
Motion Control	No
Controller	
<ul style="list-style-type: none"> • PID_Compact 	Yes; Universal PID controller with integrated optimization
<ul style="list-style-type: none"> • PID_3Step 	Yes; PID controller with integrated optimization for valves
<ul style="list-style-type: none"> • PID-Temp 	Yes; PID controller with integrated optimization for temperature
Counting and measuring	Yes
<ul style="list-style-type: none"> • High-speed counter 	No
Ambient conditions	
Ambient temperature during operation	
<ul style="list-style-type: none"> • horizontal installation, min. 	-30 °C
<ul style="list-style-type: none"> • horizontal installation, max. 	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
<ul style="list-style-type: none"> • vertical installation, min. 	-30 °C
<ul style="list-style-type: none"> • 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	
<ul style="list-style-type: none"> • min. 	-40 °C
<ul style="list-style-type: none"> • max. 	70 °C
Altitude during operation relating to sea level	
<ul style="list-style-type: none"> • 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	
<ul style="list-style-type: none"> — LAD 	Yes
<ul style="list-style-type: none"> — FBD 	Yes
<ul style="list-style-type: none"> — STL 	Yes
<ul style="list-style-type: none"> — SCL 	Yes
<ul style="list-style-type: none"> — GRAPH 	Yes
Know-how protection	
<ul style="list-style-type: none"> • User program protection/password protection 	Yes
<ul style="list-style-type: none"> • Copy protection 	No
<ul style="list-style-type: none"> • Block protection 	Yes
Access protection	
<ul style="list-style-type: none"> • protection of confidential configuration data 	Yes
<ul style="list-style-type: none"> • Password for display 	Yes
<ul style="list-style-type: none"> • Protection level: Write protection 	Yes
<ul style="list-style-type: none"> • Protection level: Read/write protection 	Yes
<ul style="list-style-type: none"> • Protection level: Complete protection 	Yes
programming / cycle time monitoring / header	
<ul style="list-style-type: none"> • lower limit 	adjustable minimum cycle time
<ul style="list-style-type: none"> • upper limit 	adjustable maximum cycle time
Dimensions	
Width	70 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	456 g
last modified:	9/22/2022 