

SIMATIC S7-1500R, CPU 1515R-2 PN, central processing unit with working memory 500 KB for program and 3 MB data, 1. interface: PROFINET RT with 2 port switch, 2. interface PROFINET RT, SIMATIC memory card necessary



General information	
Product type designation	CPU 1515R-2 PN
HW functional status	FS01
Firmware version	V2.6
Engineering with	
<ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated as of version</li> </ul>	STEP 7 V15.1 or higher
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
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Mains buffering	

- Mains/voltage failure stored energy time 5 ms

### Input current

Current consumption (rated value)	0.8 A
Inrush current, max.	2.4 A
$I^2t$	0.02 A <sup>2</sup> ·s

### Power loss

Power loss, typ.	6.3 W
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### Memory

Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes

#### Work memory

- integrated (for program) 500 kbyte
- integrated (for data) 3 Mbyte

#### Load memory

- Plug-in (SIMATIC Memory Card), max. 32 Gbyte

#### Backup

- maintenance-free Yes

### CPU processing times

for bit operations, typ.	60 ns
for word operations, typ.	72 ns
for fixed point arithmetic, typ.	96 ns
for floating point arithmetic, typ.	384 ns

### CPU-blocks

Number of elements (total)	6 000; Blocks (OB, FB, FC, DB) and UDTs
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#### DB

- Number range Number range: 1 to 59 999
- Size, max. 3 Mbyte; For non-optimized block accesses, the max. size of the DB is 64 KB

#### FB

- Number range 0 ... 65 535
- 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 startup OBs	100
• Number of asynchronous error OBs	4
• Number of synchronous error OBs	2
• Number of diagnostic alarm OBs	1
<b>Nesting depth</b>	
• per priority class	24
<b>Counters, timers and their retentivity</b>	
<b>S7 counter</b>	
• Number	2 048
<b>Retentivity</b>	
— adjustable	Yes
<b>IEC counter</b>	
• Number	Any (only limited by the main memory)
<b>Retentivity</b>	
— adjustable	Yes
<b>S7 times</b>	
• Number	2 048
<b>Retentivity</b>	
— adjustable	Yes
<b>IEC timer</b>	
• Number	Any (only limited by the main memory)
<b>Retentivity</b>	
— adjustable	Yes
<b>Data areas and their retentivity</b>	
Retentive data area (incl. timers, counters, flags), max.	512 kbyte
<b>Flag</b>	
• Number, max.	16 kbyte
• Number of clock memories	8; 8 clock memory bit, grouped into one clock memory byte
<b>Data blocks</b>	
• Retentivity adjustable	Yes
• Retentivity preset	No
<b>Local data</b>	
• per priority class, max.	64 kbyte; max. 16 KB per block
<b>Address area</b>	
Number of IO modules	4 096; max. number of modules / submodules
<b>I/O address area</b>	
• 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
<b>Subprocess images</b>	
• Number of subprocess images, max.	32
<b>Hardware configuration</b>	
<b>Number of IO Controllers</b>	
• integrated	1
<b>Time of day</b>	
<b>Clock</b>	
• Backup time	6 wk; At 40 °C ambient temperature, typically
• Deviation per day, max.	10 s; Typ.: 2 s
<b>Operating hours counter</b>	
• Number	16
<b>Clock synchronization</b>	
• supported	Yes
• in AS, master	No
• in AS, slave	No
• on Ethernet via NTP	Yes
<b>Interfaces</b>	
Number of PROFINET interfaces	1
<b>1. Interface</b>	
<b>Interface types</b>	
• Number of ports	2
• integrated switch	Yes
• RJ 45 (Ethernet)	Yes; X1
<b>Protocols</b>	
• 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
<b>PROFINET IO Controller</b>	
<b>Services</b>	
— PG/OP communication	Yes
— S7 routing	No
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No

— MRP	Yes; Only Manager Auto, max. 50 nodes; only 16 are recommended, however
— MRPD	No
— PROFINergy	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
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## 2. Interface

### Interface types

• Number of ports	1
• integrated switch	No
• RJ 45 (Ethernet)	Yes; X2

### 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

#### Number of connections

• Number of connections, max.	108
• Number of connections reserved for ES/HMI/web	10

#### Redundancy mode

• MRP	Yes; Manager Auto is permanently set in TIA. Max. 50 nodes are possible, 16 are recommended
• MRPD	No

#### SIMATIC communication

• S7 communication, as server	Yes
• S7 communication, as client	No

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. 5 multicast circuits
• DHCP	No
• SNMP	Yes
• DCP	Yes
• LLDP	Yes
Web server	
• HTTP	No
• HTTPS	No
OPC UA	
• OPC UA client	No
• OPC UA server	No
Further protocols	
• MODBUS	Yes; MODBUS TCP
Media redundancy	
• Switchover time on line break, typ.	200 ms; PROFINET MRP
• Number of stations in the ring, max.	50; Only 16 are recommended, however
S7 message functions	
Program alarms	No
Test commissioning functions	
Joint commission (Team Engineering)	No
Status block	Yes; up to 8 simultaneously
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
• 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	No
• PID_3Step	No
• PID-Temp	No
Counting and measuring	
• High-speed counter	No
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• 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
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Configuration	
Programming	
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	No
— GRAPH	No

### Know-how protection

- |                                               |     |
|-----------------------------------------------|-----|
| • User program protection/password protection | Yes |
| • Copy protection                             | No  |
| • 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 |

### Dimensions

Width	70 mm
Height	147 mm
Depth	129 mm

### Weights

Weight, approx.	830 g
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**last modified:** 03/13/2019