## SIEMENS

## Data sheet

## 6ES7515-2RM00-0AB0



SIMATIC S7-1500R, CPU 1515R-2 PN central processing unit with work memory 500 KB for program and 3 MB for data, 1st interface: PROFINET RT with 2-port switch, 2nd interface: PROFINET, SIMATIC Memory Card required

General information	
Product type designation	CPU 1515R-2 PN
HW functional status	FS01
Firmware version	V2.9
Product function	
● I&M data	Yes; I&M0 to I&M3
Isochronous mode	No
Engineering with	
<ul> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	V17 (FW V2.9) / V16 (FW V2.8) / V15.1 (FW V2.6)
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	
<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
Input current	
Current consumption (rated value)	0.8 A
Inrush current, max.	2.4 A
l²t	0.02 A <sup>2</sup> ·s
Power loss	
Power loss, typ.	6.3 W
Memory	
Number of slots for SIMATIC memory card	1
SIMATIC memory card required	Yes
Work memory	
<ul> <li>integrated (for program)</li> </ul>	500 kbyte
<ul> <li>integrated (for data)</li> </ul>	3 Mbyte
Load memory	
<ul> <li>Plug-in (SIMATIC Memory Card), max.</li> </ul>	32 Gbyte
Backup	

<ul> <li>maintenance-free</li> </ul>	Yes
	Tes
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)	8 000; Blocks (OB, FB, FC, DB) and UDTs
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
<ul> <li>Number of free cycle OBs</li> </ul>	100
<ul> <li>Number of time alarm OBs</li> </ul>	20
<ul> <li>Number of delay alarm OBs</li> </ul>	20
<ul> <li>Number of cyclic interrupt OBs</li> </ul>	20
<ul> <li>Number of process alarm OBs</li> </ul>	50
<ul> <li>Number of startup OBs</li> </ul>	100
<ul> <li>Number of asynchronous error OBs</li> </ul>	4
<ul> <li>Number of synchronous error OBs</li> </ul>	2
<ul> <li>Number of diagnostic alarm OBs</li> </ul>	1
Nesting depth	
<ul> <li>per priority class</li> </ul>	24
Counters, timers and their retentivity	
Counters, timers and their retentivity S7 counter	
	2 048
S7 counter	2 048
S7 counter • Number	2 048 Yes
S7 counter • Number Retentivity	
S7 counter • Number Retentivity — adjustable	
S7 counter • Number Retentivity — adjustable IEC counter	Yes
S7 counter • Number Retentivity — adjustable IEC counter • Number	Yes
S7 counter • Number Retentivity — adjustable IEC counter • Number Retentivity	Yes Any (only limited by the main memory)
S7 counter • Number Retentivity — adjustable IEC counter • Number Retentivity — adjustable	Yes Any (only limited by the main memory)
S7 counter • Number Retentivity — adjustable IEC counter • Number Retentivity — adjustable S7 times	Yes Any (only limited by the main memory) Yes
S7 counter • Number Retentivity — adjustable IEC counter • Number Retentivity — adjustable S7 times • Number	Yes Any (only limited by the main memory) Yes
S7 counter • Number Retentivity — adjustable IEC counter • Number Retentivity — adjustable S7 times • Number Retentivity	Yes Any (only limited by the main memory) Yes 2 048
S7 counter • Number Retentivity adjustable IEC counter • Number Retentivity adjustable S7 times • Number Retentivity adjustable	Yes Any (only limited by the main memory) Yes 2 048
S7 counter • Number Retentivity adjustable IEC counter • Number Retentivity adjustable S7 times • Number Retentivity adjustable IEC timer	Yes Any (only limited by the main memory) Yes 2 048 Yes
S7 counter         • Number         Retentivity         — adjustable         IEC counter         • Number         Retentivity         — adjustable         S7 times         • Number         Retentivity         — adjustable         IEC counter         • Number         Retentivity         — adjustable         IEC timer         • Number	Yes Any (only limited by the main memory) Yes 2 048 Yes
S7 counter         • Number         Retentivity         — adjustable         IEC counter         • Number         Retentivity         — adjustable         S7 times         • Number         Retentivity         — adjustable         S7 times         • Number         Retentivity         — adjustable         IEC timer         • Number         Retentivity	Yes Any (only limited by the main memory) Yes 2 048 Yes Any (only limited by the main memory)
S7 counter         • Number         Retentivity         — adjustable         IEC counter         • Number         Retentivity         — adjustable         S7 times         • Number         Retentivity         — adjustable         IEC timer         • Number         Retentivity         — adjustable         IEC timer         • Number         Retentivity         — adjustable	Yes Any (only limited by the main memory) Yes 2 048 Yes Any (only limited by the main memory)
S7 counter         • Number         Retentivity         adjustable         IEC counter         • Number         Retentivity         adjustable         S7 times         • Number         Retentivity         adjustable         IEC timer         • Number         Retentivity         adjustable         IEC timer         • Number         Retentivity         adjustable         Data areas and their retentivity	Yes Any (only limited by the main memory) Yes 2 048 Yes Any (only limited by the main memory) Yes Yes
S7 counter         • Number         Retentivity         - adjustable         IEC counter         • Number         Retentivity         - adjustable         S7 times         • Number         Retentivity         - adjustable         S7 times         • Number         Retentivity         - adjustable         IEC timer         • Number         Retentivity         - adjustable         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags), max.	Yes Any (only limited by the main memory) Yes 2 048 Yes Any (only limited by the main memory) Yes Yes
S7 counter         • Number         Retentivity         - adjustable         IEC counter         • Number         Retentivity         - adjustable         S7 times         • Number         Retentivity         - adjustable         S7 times         • Number         Retentivity         - adjustable         IEC timer         • Number         Retentivity         - adjustable         IEC timer         • Number         Retentivity         - adjustable         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags), max.         Flag	Yes Any (only limited by the main memory) Yes 2 048 Yes Any (only limited by the main memory) Yes 512 kbyte
S7 counter         • Number         Retentivity         adjustable         IEC counter         • Number         Retentivity         adjustable         S7 times         • Number         Retentivity         adjustable         IEC timer         • Number         Retentivity         adjustable         IEC timer         • Number         Retentivity         adjustable         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags), max.         Flag         • Size, max.	Yes Any (only limited by the main memory) Yes 2 048 Yes Yes Yes Siz kbyte
S7 counter         • Number         Retentivity         adjustable         IEC counter         • Number         Retentivity         adjustable         S7 times         • Number         Retentivity         adjustable         IEC times         • Number         Retentivity         adjustable         IEC timer         • Number         Retentivity         adjustable         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags), max.         Flag         • Size, max.         • Number of clock memories	Yes Any (only limited by the main memory) Yes 2 048 Yes Yes Yes Siz kbyte
S7 counter         • Number         Retentivity         adjustable         IEC counter         • Number         Retentivity         adjustable         S7 times         • Number         Retentivity         adjustable         IEC times         • Number         Retentivity         adjustable         IEC timer         • Number         Retentivity         adjustable         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags), max.         Flag         • Size, max.         • Number of clock memories         Data blocks	Yes Any (only limited by the main memory) Yes 2 048 Yes Yes Any (only limited by the main memory) Yes 512 kbyte 16 kbyte 8; 8 clock memory bit, grouped into one clock memory byte
S7 counter         • Number         Retentivity         adjustable         IEC counter         • Number         Retentivity         adjustable         S7 times         • Number         Retentivity         adjustable         S7 times         • Number         Retentivity         adjustable         IEC timer         • Number         Retentivity         adjustable         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags), max.         Flag         • Size, max.         • Number of clock memories         Data blocks         • Retentivity adjustable	Yes Any (only limited by the main memory) Yes 2 048 Yes Any (only limited by the main memory) Yes Any (only limited by the main memory) Yes 16 kbyte 16 kbyte 8; 8 clock memory bit, grouped into one clock memory byte Yes
S7 counter         • Number         Retentivity         - adjustable         IEC counter         • Number         Retentivity         - adjustable         S7 times         • Number         Retentivity         - adjustable         S7 times         • Number         Retentivity         - adjustable         IEC timer         • Number         Retentivity         - adjustable         Data areas and their retentivity         Retentive data area (incl. timers, counters, flags), max.         Flag         • Size, max.         • Number of clock memories         Data blocks         • Retentivity adjustable         • Retentivity preset	Yes Any (only limited by the main memory) Yes 2 048 Yes Any (only limited by the main memory) Yes Any (only limited by the main memory) Yes 16 kbyte 16 kbyte 8; 8 clock memory bit, grouped into one clock memory byte Yes

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	0 10 10
Number of subprocess images, max.	32
Hardware configuration	02
	1
Number of distributed IO systems           Number of IO Controllers	1
	1
• integrated	1
Time of day	
Clock	
•Туре	Hardware clock
Backup time	6 wk; At 40 °C ambient temperature, typically
<ul> <li>Deviation per day, max.</li> </ul>	10 s; Typ.: 2 s
Operating hours counter	
Number	16
Clock synchronization	
<ul> <li>supported</li> </ul>	Yes
<ul> <li>on Ethernet via NTP</li> </ul>	Yes
Interfaces	
Number of PROFINET interfaces	2
1. Interface	
Interface types	
• RJ 45 (Ethernet)	Yes; X1
Number of ports	2
integrated switch	- Yes
Protocols	105
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
<ul> <li>— Isochronous mode</li> </ul>	No
— IRT	No
- PROFlenergy	Yes
<ul> <li>— Number of connectable IO Devices, max.</li> </ul>	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

	A1-
PROFINET IO Controller	No
PROFINET IO Device	No Maria Oraha Oranan
SIMATIC communication	Yes; Only Server
Open IE communication	Yes
Web server	No
Media redundancy	No
Interface types	
RJ 45 (Ethernet)	Ver
• 100 Mbps	Yes
<ul><li>Autonegotiation</li><li>Autocrossing</li></ul>	Yes
Industrial Ethernet status LED	Yes
Protocols	165
Number of connections	
Number of connections, max.	108
Number of connections, max.     Number of connections reserved for ES/HMI/web	10
Number of S7 routing paths	16
Redundancy mode	10
Media redundancy	
- MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
— MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
— MRPD	No
— Switchover time on line break, typ.	200 ms; PROFINET MRP
— Number of stations in the ring, max.	50; Only 16 are recommended, however
SIMATIC communication	···· , · · , · · · · · · · · · · · · ·
<ul> <li>PG/OP communication</li> </ul>	Yes; encryption with TLS V1.3 pre-selected
S7 routing	Yes
<ul> <li>S7 communication, as server</li> </ul>	Yes
<ul> <li>S7 communication, as client</li> </ul>	No
Open IE communication	
Open in communication	
• TCP/IP	Yes
	Yes 64 kbyte
<ul> <li>TCP/IP</li> <li>— Data length, max.</li> <li>— several passive connections per port, supported</li> </ul>	
<ul> <li>TCP/IP         <ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> </ul> </li> <li>ISO-on-TCP (RFC1006)</li> </ul>	64 kbyte Yes Yes
<ul> <li>TCP/IP</li> <li>— Data length, max.</li> <li>— several passive connections per port, supported</li> </ul>	64 kbyte Yes
<ul> <li>TCP/IP         <ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> </ul> </li> <li>ISO-on-TCP (RFC1006)</li> </ul>	64 kbyte Yes 64 kbyte Yes
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<ul> <li>TCP/IP <ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> </ul> </li> <li>ISO-on-TCP (RFC1006) <ul> <li>Data length, max.</li> </ul> </li> <li>UDP <ul> <li>Data length, max.</li> <li>UDP multicast</li> </ul> </li> </ul>	64 kbyte Yes 64 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits
<ul> <li>TCP/IP <ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> </ul> </li> <li>ISO-on-TCP (RFC1006) <ul> <li>Data length, max.</li> </ul> </li> <li>UDP <ul> <li>Data length, max.</li> <li>UDP multicast</li> </ul> </li> <li>DHCP</li> </ul>	64 kbyte Yes 64 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits No
<ul> <li>TCP/IP <ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> </ul> </li> <li>ISO-on-TCP (RFC1006) <ul> <li>Data length, max.</li> </ul> </li> <li>UDP <ul> <li>Data length, max.</li> <li>UDP</li> <li>Data length, max.</li> </ul> </li> <li>UDP multicast</li> <li>DHCP</li> <li>DNS</li> </ul>	64 kbyte Yes 64 kbyte 64 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits No Yes
<ul> <li>TCP/IP <ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> </ul> </li> <li>ISO-on-TCP (RFC1006) <ul> <li>Data length, max.</li> </ul> </li> <li>UDP <ul> <li>Data length, max.</li> <li>UDP</li> <li>Data length, max.</li> </ul> </li> <li>UDP multicast</li> <li>DHCP</li> <li>DNS</li> <li>SNMP</li> </ul>	64 kbyte Yes 64 kbyte 94 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits No Yes Yes
<ul> <li>TCP/IP <ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> </ul> </li> <li>ISO-on-TCP (RFC1006) <ul> <li>Data length, max.</li> </ul> </li> <li>UDP <ul> <li>Data length, max.</li> <li>UDP multicast</li> </ul> </li> <li>DHCP <ul> <li>DNS</li> <li>SNMP</li> <li>DCP</li> </ul> </li> </ul>	64 kbyte Yes 64 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits No Yes Yes Yes
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<ul> <li>TCP/IP <ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> </ul> </li> <li>ISO-on-TCP (RFC1006) <ul> <li>Data length, max.</li> <li>UDP</li> <li>Data length, max.</li> <li>UDP multicast</li> </ul> </li> <li>DHCP <ul> <li>DNS</li> <li>SNMP</li> <li>DCP</li> <li>LLDP</li> </ul> </li> <li>Web server <ul> <li>HTTP</li> <li>HTTPS</li> </ul> </li> <li>OPC UA</li> <li>OPC UA Client</li> <li>OPC UA Server</li> </ul> <li>Further protocols <ul> <li>MODBUS</li> </ul> </li>	64 kbyte Yes 94 kbyte Yes 94 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits No Yes Yes Yes Yes Yes No No No
<ul> <li>TCP/IP <ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> </ul> </li> <li>ISO-on-TCP (RFC1006) <ul> <li>Data length, max.</li> </ul> </li> <li>UDP <ul> <li>Data length, max.</li> <li>UDP multicast</li> </ul> </li> <li>DHCP <ul> <li>DNS</li> <li>SNMP</li> <li>DCP</li> <li>LLDP</li> </ul> </li> <li>Web server <ul> <li>HTTP</li> <li>HTTPS</li> </ul> </li> <li>OPC UA</li> <li>OPC UA Client <ul> <li>OPC UA Server</li> </ul> </li> <li>Further protocols <ul> <li>MODBUS</li> </ul> </li> <li>Isochronous mode</li> <li>Equidistance</li> </ul>	64 kbyte Yes 94 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits No Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes
<ul> <li>TCP/IP <ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> </ul> </li> <li>ISO-on-TCP (RFC1006) <ul> <li>Data length, max.</li> </ul> </li> <li>UDP <ul> <li>Data length, max.</li> <li>UDP multicast</li> </ul> </li> <li>DHCP <ul> <li>DNS</li> <li>SNMP</li> <li>DCP</li> <li>LLDP</li> </ul> </li> <li>Web server <ul> <li>HTTP</li> <li>HTTPS</li> </ul> </li> <li>OPC UA</li> <li>OPC UA Client <ul> <li>OPC UA Server</li> </ul> </li> <li>Further protocols <ul> <li>MODBUS</li> </ul> </li> <li>Isochronous mode</li> </ul> <li>Equidistance</li> <li>S7 message functions for message functions, max.</li>	64 kbyte Yes Yes 64 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits No Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes
<ul> <li>TCP/IP <ul> <li>Data length, max.</li> <li>several passive connections per port, supported</li> </ul> </li> <li>ISO-on-TCP (RFC1006) <ul> <li>Data length, max.</li> </ul> </li> <li>UDP <ul> <li>Data length, max.</li> <li>UDP multicast</li> </ul> </li> <li>DHCP <ul> <li>DNS</li> <li>SNMP</li> <li>DCP</li> <li>LLDP</li> </ul> </li> <li>Web server <ul> <li>HTTP</li> <li>HTTPS</li> </ul> </li> <li>OPC UA</li> <li>OPC UA Client <ul> <li>OPC UA Server</li> </ul> </li> <li>Further protocols <ul> <li>MODBUS</li> </ul> </li> <li>Isochronous mode</li> <li>Equidistance</li> </ul>	64 kbyte Yes 94 kbyte Yes 2 kbyte; 1 472 bytes for UDP broadcast Yes; Max. 5 multicast circuits No Yes Yes Yes Yes Yes Yes Yes Yes Yes No No No No

	block, ProDiag or GRAPH
Number of loadable program messages in RUN, max.	5 000
Number of simultaneously active program alarms	5 000
Number of program alarms	800
Number of program atoms     Number of alarms for system diagnostics	200
Test commissioning functions	200
Joint commission (Team Engineering)	No
Status block	Yes; up to 8 simultaneously
Single step	No
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, counters
Number of variables, max.	
— of which status variables, max.	200; per job
— of which control variables, max.	200; per job
Forcing	
• Forcing	Yes
<ul> <li>Forcing, variables</li> </ul>	Peripheral inputs/outputs
<ul> <li>Number of variables, max.</li> </ul>	200
Diagnostic buffer	
• present	Yes
<ul> <li>Number of entries, max.</li> </ul>	3 200
— of which powerfail-proof	500
Traces	
<ul> <li>Number of configurable Traces</li> </ul>	4
<ul> <li>Memory size per trace, max.</li> </ul>	512 kbyte
Interrupts/diagnostics/status information	
Diagnostics indication LED	
RUN/STOP LED	Yes
• ERROR LED	Yes
MAINT LED	Yes
<ul> <li>Connection display LINK TX/RX</li> </ul>	Yes
Supported technology objects	
Motion Control	No
Controller	
<ul> <li>PID_Compact</li> </ul>	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
<ul> <li>High-speed counter</li> </ul>	No
Ambient conditions	
Ambient temperature during operation	
horizontal installation, min.	0°C
<ul> <li>horizontal installation, max.</li> </ul>	60 °C; Display: 50 °C, at an operating temperature of typically 50 °C, the display is switched off
<ul> <li>vertical installation, min.</li> </ul>	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
Altitude during operation relating to sea level	
<ul> <li>Installation altitude above sea level, max.</li> </ul>	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
Configuration	
Programming	
Programming language	
— LAD	Yes

— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	No
— GRAPH	Yes
Know-how protection	
<ul> <li>User program protection/password protection</li> </ul>	Yes
Copy protection	No
<ul> <li>Block protection</li> </ul>	Yes
Access protection	
<ul> <li>protection of confidential configuration data</li> </ul>	Yes
<ul> <li>Password for display</li> </ul>	Yes
<ul> <li>Protection level: Write protection</li> </ul>	Yes
<ul> <li>Protection level: Read/write protection</li> </ul>	Yes
Protection level: Complete protection	Yes
Cycle time monitoring	
lower limit	adjustable minimum cycle time
upper limit	adjustable maximum cycle time
Dimensions	
Width	70 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	830 g

last modified:

3/12/2021 🖸