SIEMENS

Data sheet

6ES7515-2AM01-0AB0

SIMATIC S7-1500, CPU 1515-2 PN, Central processing unit with work memory 500 KB for Program and 3 MB for data, 1st interface: PROFINET IRT with 2-port switch, 2nd interface: PROFINET RT, 30 ns bit performance, SIMATIC Memory Card required



General information	
Product type designation	CPU 1515-2 PN
HW functional status	FS03
Firmware version	V2.5
Engineering with	
 STEP 7 TIA Portal configurable/integrated as of version 	V15 (FW V2.5) / V13 SP1 Update 4 (FW V1.8) or higher
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

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)	0.8 A
Inrush current, max.	2.4 A; Rated value
12t	0.02 A ² ·s
	0.027(0
Power	
Infeed power to the backplane bus	12 W
Power consumption from the backplane bus (balanced)	6.2 W
(balanced)	
Power loss	
Power loss, typ.	6.3 W
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.	30 ns
for word operations, typ.	36 ns
for fixed point arithmetic, typ.	48 ns
for floating point arithmetic, typ.	192 ns
CPU-blocks	
Number of elements (total)	6 000; Blocks (OB, FB, FC, DB) and UDTs
DB	0 000, 2100.10 (02, 12, 10, 22) a.i.a. 02 i.
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
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; With minimum OB 3x cycle of 500 μs
 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	
— 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),	512 kbyte; In total; available retentive memory for bit memories,
max.	timers, counters, DBs, and technology data (axes): 472 KB
Extended retentive data area (incl. timers, counters,	3 Mbyte; When using PS 60W 24/48/60V DC HF
flags), max.	

Flag	
Number, max.	16 kbyte
Number of clock memories	8; 8 clock memory bits, grouped into one clock memory byte
Data blocks	o, o diodk monery she, grouped into one diodk monery syle
	Yes
Retentivity adjustable	No
Retentivity preset	NO
Local data	OA liberton cross AO MD combined
• 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 distributed IO systems	64; A distributed I/O system is characterized not only by the
	integration of distributed I/O via PROFINET or PROFIBUS
	communication modules, but also by the connection of I/O via AS-
	i master modules or links (e.g. IE/PB-Link)
Number of DP masters	
● Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Number of IO Controllers	
• integrated	2
• Via CM	8; A maximum of 8 CMs/CPs (PROFIBUS, PROFINET, Ethernet) can be inserted in total
Rack	
Modules per rack, max.	32; CPU + 31 modules
Number of lines, max.	1
PtP CM	
Number of PtP CMs	the number of connectable PtP CMs is only limited by the number of available slots
Time of day	
Clock	
• Туре	Hardware clock

Deviation per day, max. Operating hours counter Number Supported Supported Number Interface Interface Interface Number of PROFINET interfaces - Number of ports - Number of connectable IO Devices, max Number of connectable IO Devices for RT, max Number of connectable IO Devices for RT, max Number of connectable IO Devices for RT, max.	Backup time	6 wk; At 40 °C ambient temperature, typically
Operating hours counter Number Number Number Number Number of PROFINET interfaces Number of Porosition PROFINET IO Controller New Services PGIOP communication PROF controller Services PGIOP communication PROF mumber of experiments and or MRP client; max. number of devices in the ring; 50 MRPD PROFINET IO Profilenergy PROFINET IO Profiler PROFINET IO Controller Services PGIOP communication Yes PGIOP communication Yes PGIOP communication Yes PGIOP communication Yes PROFINET IO Controller Services PGIOP communication Yes PROFINET IO Controller Services PGIOP communication Yes Services PGIOP communication PROFINET (Orticle controller co	·	
Number 16 Clock synchronization supported Yes in AS, snaster Yes in AS, siave Yes interfaces Number of PROFINET interfaces 2 1. Interface Interface types	· · · · · · · · · · · · · · · · · · ·	
in AS, master in AS, slave in AS, slave		16
in AS, master in AS, slave in AS, slave	Clock synchronization	
in AS, master in AS, slave on Ethernet via NTP Yes nterfaces Number of PROFINET interfaces 2 1. Interface Interface types Number of ports integrated switch RJ 45 (Ethernet) PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Services PROFINET IO Controller Yes Media redundancy Yes MRP Automanager according to IEC 62439-2 Edition 2.0 PROFINET IO Controller Services PCO/OP communication Yes Open IE communication Yes Media redundancy Yes Services PCO/OP communication Yes PROFINET IO Controller Services PROFINET IO Controller Services PROFINET IO Controller Yes A Mathematical Services PROFINET IO Controller Services PROFINET IO Controller Yes New Media redundancy Yes PROFINET IO Controller Yes A MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 Yes; Requirement: IRT PROFINET devices PROFINET devices PROFINET devices PROFINET devices can be connected via AS-i, PROFIBUS or PROFINET Of which IO devices with IRT, max. Pumber of connectable IO Devices for RT, PROFIBUS or PROFINET		Yes
interfaces Number of PROFINET interfaces 2 1 Interface Interface Vpes Interface bypes Interface bypes Interface bypes Interface vpes	• •	Yes
Number of PROFINET interfaces 2 1. Interface Interface types • Number of ports • integrated switch • RJ 45 (Ethernet) • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server • Media redundancy PROFINET IO Controller Services - PG/OP communication - S7 routing - Isochronous mode - Open IE communication - SR routing - IRT - MRP - M	● in AS, slave	Yes
Number of PROFINET interfaces 1. Interface Interface types • Number of ports • Integrated switch • RJ 45 (Ethernet) • IP protocol • PROFINET IO Controller • PROFINET IO Device • SIMATIC communication • Open IE communication • Web server • Media redundancy • PROFINET IO Controller Services — PG/OP communication — S7 routing — Isochronous mode — Open IE communication — Yes — IRT — MRP — MRP — Wes — MRP — Yes, As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 — Yes, Requirement: IRT — Yes — Prioritized startup — Prioritized startup — Number of connectable IO Devices, max. — Number of connectable IO Devices for RT, 12 2 Yes 12 Yes 2 Yes Yes Yes Yes Yes Yes	• on Ethernet via NTP	Yes
Interface Interface types Number of ports Integrated switch RJ 45 (Ethernet) PROFINET IO Controller PROFINET IO Device SIMATIC communication Open IE communication Web server Media redundancy PROFINET IO Controller Services PROFORE TO CONTROLLER Yes As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 Yes: Requirement: IRT Yes PROFIBUS or PROFINET devices 256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Of which IO devices with IRT, max. Number of connectable IO Devices for RT,	Interfaces	
Interface types Number of ports Integrated switch RJ 45 (Ethernet) PROFINET IO Controller PROFINET IO Device SiMATIC communication Web server Media redundancy PROFINET IO Controller Services PROFOP communication Yes PROFOP communication Yes PROFINET IO Controller Services PROFOP communication Yes PROFINET Yes Proviting Yes Proviting Yes, As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 Yes; Requirement: IRT PROFILE devices PROFILE devices PROFILE devices Services PROFILE devices and be connected via AS-i, PROFIBUS or PROFINET PROFILE devices can be connected via AS-i, PROFIBUS or PROFINET	Number of PROFINET interfaces	2
Number of ports integrated switch RJ 45 (Ethernet) Proctionality IP protocol PROFINET IO Controller Services PROFINET IO Controller Yes Profinitized startup PROFINET Yes Prioritized startup Prioritized startup Number of connectable IO Devices, max. Services PROFIBUS or PROFINET 64 256	1. Interface	
integrated switch RJ 45 (Ethernet) Prunctionality IP protocol PROFINET IO Controller PROFINET IO Device SIMATIC communication Web server Media redundancy PROFINET IO Controller PROFINET IO Controller PROFINET IO Controller Yes Media redundancy PROFINET IO Controller Services PROFINET IO Controller Services PG/OP communication Yes Popen IE communication Yes PROFINET IO Controller Services PG/OP communication Yes Popen IE communication Yes Profitiged startup PROFINET IO Yes; Requirement: IRT PROFIenergy Prioritized startup Number of connectable IO Devices, max. Polymber of connectable IO Devices for RT, PROFIBUS or PROFINET PROFIBUS or PROFINET Of which IO devices with IRT, max. Pumber of connectable IO Devices for RT, 256	Interface types	
RJ 45 (Ethernet) Protocol PROFINET IO Controller PROFINET IO Communication Web server Media redundancy PROFINET IO Controller Services PG/OP communication Yes PG/OP communication Yes PG/OP communication Yes PROFINET IO Controller Services PG/OP communication Yes PROFINET IO Controller Services PG/OP communication Yes PS routing Pes Popen IE communication Yes Popen IE communication Yes Popen IE communication Yes Pes Popen IE communication Yes Pes Popen IE communication Yes Pes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 Yes; Requirement: IRT PROFlenergy Perioritized startup Profrioritized startup Profrioritized startup Pof which IO devices with IRT, max. Number of connectable IO Devices, max. Polymetric profice in total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET PROFIBUS or PROFINET	Number of ports	2
Functionality IP protocol PROFINET IO Controller PROFINET IO Device PROFINET IO Device SIMATIC communication Pes Web server Media redundancy PROFINET IO Controller Services PROFINET IO Controller Services PG/OP communication Yes Services PG/OP communication Yes Popen IE communication Yes Profinet IO Controller Services PG/OP communication Yes Popen IE communication Yes Popen IE communication Yes Popen IE communication Yes Popen IE communication Yes Profinet Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 MRPD PROFIenergy Prioritized startup PROFIenergy Prioritized startup Number of connectable IO Devices, max. PNUmber of connectable IO Devices for RT, PROFIBUS or PROFINET	• integrated switch	Yes
PROFINET IO Controller PROFINET IO Device PROFINET IO Device SIMATIC communication Pes Web server Media redundancy PROFINET IO Controller Services PROFINET IO Controller Services PG/OP communication Yes Popen IE communication Yes PROFINET IO Controller Services PG/OP communication Yes Popen IE Communication Popen IE Commu	• RJ 45 (Ethernet)	Yes; X1
PROFINET IO Controller PROFINET IO Device SIMATIC communication Yes Open IE communication Yes Media redundancy Yes; MRP Automanager according to IEC 62439-2 Edition 2.0 PROFINET IO Controller Services — PG/OP communication — S7 routing — Isochronous mode — Open IE communication — IRT — MRP — Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 — MRPD — PROFIenergy — Prioritized startup — Number of connectable IO Devices, max. — Of which IO devices with IRT, max. — Number of connectable IO Devices for RT, Pes Yes Yes Yes Yes Yes Yes Yes	Functionality	
PROFINET IO Device SIMATIC communication Open IE communication Yes Web server Media redundancy PROFINET IO Controller Services PROFOP communication Yes Proprintized startup Number of connectable IO Devices, max. SIMATIC communication Yes Proprintized startup Simature Simature Simature Yes Yes Yes Yes Yes NarP Automanager according to IEC 62439-2 Edition 2.0 Yes	IP protocol	Yes; IPv4
SIMATIC communication Open IE communication Yes Web server Media redundancy PROFINET IO Controller Services - PG/OP communication Yes - Isochronous mode - Open IE communication Yes - Open IE communication Yes - Number of connectable IO Devices, max Number of connectable IO Devices for RT, - Wes - Open IE communication Yes; MRP Automanager according to IEC 62439-2 Edition 2.0 Yes Yes; MRP Automanager according to IEC 62439-2 Edition 2.0 Yes Yes - PG/OP communication Yes - Yes - PG/OP communication Yes - Yes - S7 routing Yes - Yes - Open IE communication Yes - Yes - Open IE communication Yes - Yes - As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 Yes; Requirement: IRT - Yes - PROFIenergy - Prioritized startup - Number of connectable IO Devices, max Number of connectable IO Devices for RT, - 256	 PROFINET IO Controller 	Yes
 Open IE communication Web server Media redundancy Yes; MRP Automanager according to IEC 62439-2 Edition 2.0 PROFINET IO Controller Services PG/OP communication Yes Sorvices PG/OP communication Yes Isochronous mode Yes Open IE communication Yes IRT MRP Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 Yes; Requirement: IRT PROFlenergy Prioritized startup Number of connectable IO Devices, max. Yes; Max. 32 PROFINET devices PROFIBUS or PROFINET Of which IO devices with IRT, max. Number of connectable IO Devices for RT, 	PROFINET IO Device	Yes
 ◆ Web server ◆ Media redundancy Yes; MRP Automanager according to IEC 62439-2 Edition 2.0 PROFINET IO Controller Services — PG/OP communication — S7 routing — Isochronous mode — Open IE communication — IRT — MRP — MRP — MRP — Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 — MRPD — PROFlenergy — Prioritized startup — Number of connectable IO Devices, max. — Of which IO devices with IRT, max. — Number of connectable IO Devices for RT, 256 	 SIMATIC communication 	Yes
 Media redundancy Yes; MRP Automanager according to IEC 62439-2 Edition 2.0 PROFINET IO Controller Services — PG/OP communication — S7 routing — Isochronous mode — Open IE communication — IRT — MRP — MRP — Wes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 — MRPD — PROFlenergy — Prioritized startup — Number of connectable IO Devices, max. — Of which IO devices with IRT, max. — Number of connectable IO Devices for RT, 256 	 Open IE communication 	Yes
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 - MRPD Yes; Requirement: IRT - PROFlenergy Yes - Prioritized startup Yes; Max. 32 PROFINET devices - Number of connectable IO Devices, max. 256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET - Of which IO devices with IRT, max Number of connectable IO Devices for RT, 256	• Web server	Yes
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 - MRPD Yes; Requirement: IRT - PROFlenergy Yes - Prioritized startup Yes; Max. 32 PROFINET devices - Number of connectable IO Devices, max. 256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET - Of which IO devices with IRT, max Number of connectable IO Devices for RT, - 256	Media redundancy	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0
 — PG/OP communication — S7 routing — Isochronous mode — Open IE communication — IRT — MRP — MRP — Was; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 — MRPD — PROFlenergy — Prioritized startup — Number of connectable IO Devices, max. — Of which IO devices with IRT, max. — Number of connectable IO Devices for RT, 256 	PROFINET IO Controller	
 S7 routing Isochronous mode Yes Open IE communication IRT MRP MRP Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 MRPD Yes; Requirement: IRT PROFlenergy Prioritized startup Number of connectable IO Devices, max. Of which IO devices with IRT, max. Number of connectable IO Devices for RT, 256 	Services	
 Isochronous mode Open IE communication IRT MRP MRPD MRPD Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 MRPD PROFlenergy Prioritized startup Number of connectable IO Devices, max. Of which IO devices with IRT, max. Number of connectable IO Devices for RT, 100 devices 100 devices can be connected via AS-i, PROFIBUS or PROFINET Mumber of connectable IO Devices for RT, 256 	— PG/OP communication	Yes
 Open IE communication IRT MRP Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 MRPD Yes; Requirement: IRT PROFlenergy Prioritized startup Number of connectable IO Devices, max. 256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Of which IO devices with IRT, max. Number of connectable IO Devices for RT, 256 	— S7 routing	Yes
 — IRT — MRP — Wes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 — MRPD — PROFlenergy — Prioritized startup — Number of connectable IO Devices, max. — Of which IO devices with IRT, max. — Number of connectable IO Devices for RT, — Number of connectable IO Devices for RT, 	— Isochronous mode	Yes
 MRP Yes; As MRP redundancy manager and/or MRP client; max. number of devices in the ring: 50 MRPD Yes; Requirement: IRT PROFlenergy Prioritized startup Number of connectable IO Devices, max. Yes; Max. 32 PROFINET devices Number of connectable IO Devices, max. 256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Of which IO devices with IRT, max. Number of connectable IO Devices for RT, 256 	 Open IE communication 	Yes
number of devices in the ring: 50 - MRPD Yes; Requirement: IRT - PROFlenergy Yes - Prioritized startup - Number of connectable IO Devices, max. 256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET - Of which IO devices with IRT, max Number of connectable IO Devices for RT, 256	— IRT	Yes
 PROFlenergy Prioritized startup Number of connectable IO Devices, max. Of which IO devices with IRT, max. Number of connectable IO Devices for RT, Yes Yes; Max. 32 PROFINET devices 256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Of which IO devices with IRT, max. 256 	— MRP	
 — Prioritized startup — Number of connectable IO Devices, max. — Of which IO devices with IRT, max. — Number of connectable IO Devices for RT, Yes; Max. 32 PROFINET devices 256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET 64 256	— MRPD	Yes; Requirement: IRT
 Number of connectable IO Devices, max. 256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET Of which IO devices with IRT, max. Number of connectable IO Devices for RT, 256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET 256 	— PROFlenergy	Yes
via AS-i, PROFIBUS or PROFINET — Of which IO devices with IRT, max. — Number of connectable IO Devices for RT, 256	— Prioritized startup	Yes; Max. 32 PROFINET devices
— Number of connectable IO Devices for RT, 256	— Number of connectable IO Devices, max.	
	— Of which IO devices with IRT, max.	64
max.	— Number of connectable IO Devices for RT,	256
	max.	

— of which in line, max.	256
 Number of IO Devices that can be 	8; in total across all interfaces
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
Update time for IRT	
— for send cycle of 250 μs	$250~\mu s$ to 4 ms; Note: In the case of IRT with isochronous mode, the minimum update time of $500~\mu s$ of the isochronous OB is decisive
— 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
— With IRT and parameterization of "odd" send cycles	Update time = set "odd" send clock (any multiple of 125 μ s: 375 μ s, 625 μ s 3 875 μ s)
Update time for 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
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
 Open IE communication 	Yes
— IRT	Yes
— MRP	Yes
— MRPD	Yes; Requirement: IRT
— PROFlenergy	Yes
 Shared device 	Yes
 Number of IO Controllers with shared 	4
device, max.	
Asset management record	Yes; Per user program
2. Interface	
Interface types	
Number of ports	1
• integrated switch	No Va
• RJ 45 (Ethernet)	Yes; X2

Functionality	
IP protocol	Yes; IPv4
PROFINET IO Controller	Yes
PROFINET IO Device	Yes
SIMATIC communication	Yes
Open IE communication	Yes
Web server	Yes
Media redundancy	No
PROFINET IO Controller	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	No
— PROFlenergy	Yes
 Prioritized startup 	No
 Number of connectable IO Devices, max. 	32; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
 Number of connectable IO Devices for RT, max. 	32
— of which in line, max.	32
 Number of IO Devices that can be simultaneously activated/deactivated, max. 	8; in total across all interfaces
 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
Update time for RT	
— for send cycle of 1 ms	1 ms to 512 ms
PROFINET IO Device	
Services	
— PG/OP communication	Yes
— S7 routing	Yes
— Isochronous mode	No
— Open IE communication	Yes
— IRT	No
— MRP	No
— MRPD	No
— PROFlenergy	Yes
— Prioritized startup	No

— Shared device
— Number of IO Controllers with shared device, max.

— Asset management record Yes; Per user program

Interface types RJ 45 (Ethernet) • 100 Mbps • Autonegotiation • Autocrossing • Industrial Ethernet status LED Yes

 Industrial Ethernet status LED 	Yes
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
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.	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	Yes; Standard and user pages
• HTTPS	Yes; Standard and user pages
OPC UA	
Runtime license required	Yes

OPC UA Server	Yes; Data access (read, write, subscribe), method call, custom address space
 Application authentication 	Yes
— Security policies	Available security policies: None, Basic128Rsa15, Basic256Rsa15, Basic256Sha256
 User authentication 	"anonymous" or by user name & password
— Number of sessions, max.	48
 Number of accessible variables, max. 	100 000
 Number of registerable nodes, max. 	20 000
 Subscriptions per session, max. 	20
— Sampling time, min.	100 ms
— Send time, min.	200 ms
 Number of server methods, max. 	50
 Number of inputs/outputs per server method, max. 	20
 Number of monitored items, max. 	2 000; For 1 s sampling interval and 1 s send interval
 Number of server interfaces, max. 	10
 Number of nodes for user-defined server 	5 000
interfaces, max.	
Further protocols	
• MODBUS	Yes; MODBUS TCP
Media redundancy	
 Switchover time on line break, typ. 	200 ms; For MRP, bumpless for MRPD
 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
Program alarms	Yes
Number of configurable program alarms	10 000
Number of simultaneously active program alarms	
 Number of program alarms 	600
 Number of alarms for system diagnostics 	200
 Number of 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)
Status block Single step	

Number of breakpoints	8
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 Control	Yes; Note: The number of axes affects the cycle time of the PLC
	program; selection guide via the TIA Selection Tool or SIZER
Number of available Motion Control resources for the description of a variable o	2 400
for technology objects (except cam disks)	
Required Motion Control resources	40
— per speed-controlled axis	40
— per positioning axis	80
— per synchronous axis	160
— per external encoder	80
— per output cam	20
— per cam track	160
— per probe	40
Positioning axis	
 Number of positioning axes at motion control cycle of 4 ms (typical value) 	7
Number of positioning axes at motion approximately such as \$2 mo (typical value).	14
control cycle of 8 ms (typical value)	

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, 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	
— GRAPH	Yes	
Know-how protection		
User program protection/password 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
Height	147 mm
Depth	129 mm

Weight, approx. 830 g	

last modified: 04/26/2018