6ES7315-2EH14-0AB0

Data sheet



SIMATIC S7-300 CPU 315-2 PN/DP, Central processing unit with 384 KB work memory, 1st interface MPI/DP 12 Mbit/s, 2nd interface Ethernet PROFINET, with 2-port switch, Micro Memory Card required

General information	
HW functional status	01
Firmware version	V3.2
Product function	
 Isochronous mode 	Yes; Via PROFIBUS DP or PROFINET interface
Engineering with	
 Programming package 	STEP 7 V5.5 or higher
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
external protection for power supply lines (recommendation)	2 A min.
Mains buffering	
 Mains/voltage failure stored energy time 	5 ms
Repeat rate, min.	1 s
Input current	
Current consumption (rated value)	750 mA
Current consumption (in no-load operation), typ.	150 mA
Inrush current, typ.	4 A
l²t	1 A²-s
Power loss	
Power loss, typ.	4.65 W
Memory	
Work memory	
• integrated	384 kbyte
• expandable	No
Load memory	
Plug-in (MMC)	Yes
Plug-in (MMC), max.	8 Mbyte
 Data management on MMC (after last programming), min. 	10 a
Backup	
• present	Yes; Guaranteed by MMC (maintenance-free)
without battery	Yes; Program and data
CPU processing times	
for bit operations, typ.	0.05 μs
for word operations, typ.	0.09 µs
for fixed point arithmetic, typ.	0.12 µs
for floating point arithmetic, typ.	0.45 µs
CPU-blocks	

Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
Number, max.	1 024; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	C i hayto
Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
OB	OF NOTICE
• Size, max.	64 kbyte
Number of free cycle OBs	1; OB 1
•	
Number of time alarm OBs	1; OB 10
Number of delay alarm OBs	2; OB 20, 21
Number of cyclic interrupt OBs	4; OB 32, 33, 34, 35
 Number of process alarm OBs 	1; OB 40
 Number of DPV1 alarm OBs 	3; OB 55, 56, 57
 Number of isochronous mode OBs 	1; OB 61
 Number of startup OBs 	1; OB 100
 Number of asynchronous error OBs 	6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)
 Number of synchronous error OBs 	2; OB 121, 122
Nesting depth	
per priority class	16
additional within an error OB	4
Counters, timers and their retentivity	
S7 counter	
Number	256
Retentivity	250
— adjustable	Yes
•	
— preset	Z 0 to Z 7
Counting range	V
— adjustable	Yes
— lower limit	0
— upper limit	999
IEC counter	
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
S7 times	
Number	256
Retentivity	
— adjustable	Yes
— preset	No retentivity
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	-
	Yes
• present	Yes
presentType	SFB
presentTypeNumber	
 present Type Number Data areas and their retentivity	SFB Unlimited (limited only by RAM capacity)
present Type Number Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max.	SFB
 present Type Number Data areas and their retentivity	SFB Unlimited (limited only by RAM capacity) 128 kbyte
present Type Number Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max.	SFB Unlimited (limited only by RAM capacity)
• present • Type • Number Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Flag	SFB Unlimited (limited only by RAM capacity) 128 kbyte
Type Number Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Flag Size, max.	SFB Unlimited (limited only by RAM capacity) 128 kbyte 2 048 byte
Present Type Number Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Flag Size, max. Retentivity available	SFB Unlimited (limited only by RAM capacity) 128 kbyte 2 048 byte Yes; MB 0 to MB 2 047
present Type Number Data areas and their retentivity Retentive data area (incl. timers, counters, flags), max. Flag Size, max. Retentivity available Retentivity preset	SFB Unlimited (limited only by RAM capacity) 128 kbyte 2 048 byte Yes; MB 0 to MB 2 047 MB 0 to MB 15

Retentivity preset	Yes
Local data	100
per priority class, max.	32 768 byte; Max. 2048 bytes per block
Address area	2
I/O address area	
• Inputs	2 048 byte
Outputs	2 048 byte
of which distributed	20.000,00
— Inputs	2 048 byte
— Outputs	2 048 byte
Process image	
• Inputs	2 048 byte
Outputs	2 048 byte
 Inputs, adjustable 	2 048 byte
 Outputs, adjustable 	2 048 byte
 Inputs, default 	128 byte
Outputs, default	128 byte
Subprocess images	
Number of subprocess images, max.	1; With PROFINET IO, the length of the user data is limited to 1600 bytes
Digital channels	
• Inputs	16 384
— of which central	1 024
Outputs	16 384
— of which central	1 024
Analog channels	
• Inputs	1 024
— of which central	256
Outputs	1 024
— of which central	256
Hardware configuration	
Number of expansion units, max.	3
Number of DP masters	,
• integrated	1
via CP Number of energible EMs and CDs (recommended)	4
Number of operable FMs and CPs (recommended)	0
• FM	8
• CP, PtP	8 10
• CP, LAN	10
Rack Racks, max.	4
Modules per rack, max.	8
Time of day	0
Clock	
Hardware clock (real-time)	Yes
retentive and synchronizable	Yes
Backup time	6 wk; At 40 °C ambient temperature
Deviation per day, max.	10 s; Typ.: 2 s
Behavior of the clock following POWER-ON	Clock continues running after POWER OFF
Behavior of the clock following expiry of backup period	the clock continues at the time of day it had when power was switched off
Operating hours counter	, , , , , , , , , , , , , , , , , , , ,
Number	1
Number/Number range	0
Range of values	0 to 2^31 hours (when using SFC 101)
Granularity	1 h
• retentive	Yes; Must be restarted at each restart
Clock synchronization	
supported	Yes
• to MPI, master	Yes
• on MPI, device	Yes
• to DP master	Voc: With DB clave only clave clock
to DP, master	Yes; With DP slave only slave clock

an DD davides	V
• on DP, device	Yes
• in AS, master	Yes
• in AS, device	Yes
on Ethernet via NTP	Yes; As client
Digital inputs	
Number of digital inputs	0
Digital outputs	
Number of digital outputs	0
Analog inputs	
Number of analog inputs	0
Analog outputs	
Number of analog outputs	0
Interfaces	4. 2 morte (quittel) DIAE
Number of industrial Ethernet interfaces	1; 2 ports (switch) RJ45
Number of PROFINET interfaces	1; 2 ports (switch) RJ45
Number of RS 485 interfaces	1; Combined MPI / PROFIBUS DP
Number of RS 422 interfaces	0
1. Interface	Internated DO 405 interfere
Interface type	Integrated RS 485 interface
Isolated	Yes
Interface types	Voc
RS 485 Output current of the interface, may	Yes 200 mA
Output current of the interface, max. Protocols	200 MA
• MPI	Yes
	Yes
PROFIBUS DP davise	
PROFIBUS DP device Printle printle arm action.	Yes
Point-to-point connection MPI	No
Transmission rate, max.	12 Mbit/s
Services	12 MDIUS
— PG/OP communication	Yes
— Routing	Yes
Global data communication	Yes
— S7 basic communication	
	Yes
— S7 communication	Yes
— S7 communication, as client	No; but via CP and loadable FB
— S7 communication, as server PROFIBUS DP master	Yes
	12 Mbit/s
Transmission rate, max.max. number of DP devices	124
	124
Services	Yes
— PG/OP communication	Yes
— Routing	
— Global data communication	No Voc: I blocks only
— S7 basic communication	Yes; I blocks only
— S7 communication	Yes
— S7 communication, as client	No Yes
— S7 communication, as server	
— Equidistance	Yes
— Isochronous mode	Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO
— SYNC/FREEZE	Yes
— activation/deactivation of DP devices	Yes
 max. number of DP devices that can be activated/deactivated at the same time 	8
 Direct data exchange (slave-to-slave communication) 	Yes; as subscriber
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte

FORDIBLE Desirue **Transmission rate, max.** **automatic baud rate search** **automatic baud rate search** **Autoress area, max.** **automatic baud rate search** **Autoress area, max.** **Bervices**
Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. PG/OP communication Routing PG/OP communication PS / Soals communication PS / Soals communication PS / Soals communication PS / Soals communication PS / Sommunication PS /
automatic baud rate search Address area, max. 32 buse Address area, max. 32 byte PG/OP communication Routing
Address area, max. User data per address area, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - DPV1 - DPV1 - No Transfer memory - Inputs - July 244 byte - July 244 byte - July 244 byte - July 244 byte - July 245 byte Interface bye Interface bye Isolated - Yes automatic detection of transmission rate - Yes; 10/100 Mbit/s - Autocrossing - Yes - RJ 45 (Ethernet) - Na - RJ 45 (Ethernet) - Na - PROFINET ID Device - PROFINET ID Device - PROFINET ID Device - PROFINET CBA - PROFINET ID Device - PROFINET CBA - PROFINET OB Communication - Yes; Via TCP/IP, ISO on TCP, and UDP - Ves - Media redundancy - Yes - ROUND - Scommunication - Yes - ROUND - Scommunication - Yes - ROUND - Scommunication - Yes - ROUND - PROFINET IO Controller - PROFINET CBA - PROFIBUS DP master - No - PROFINET CBA - PROFIBUS DP device - PROFINET IO Controller - Transmission rate, max PROFINET IO Communication - Yes - Media redundancy - Yes - Media redundancy - Yes - Routing - S' communication - Yes - Still isodarbile FBs, max, configurable connections: 14, max, number of instances: 32 - Psochronous mode - Yes - Still isodarbile FBs, max, configurable connections: 14, max, number of instances: 32 - Services - Psochronous mode - Profibus Develore and the services are and the best alternatively on PROFIBUS - Instances: 32 - Services - Psochronous mode - Yes - With loadable FBs, max, configurable connections: 14, max, number of instances: 32 - Services - Psochronous mode - Yes - Scohronous mode - Yes - Y
User data per address area, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 communication - S7 communication - S7 communication, as client - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - No - Transfer memory - Inputs - Outputs - Uniques - Outputs - Uniques - Outputs - PROFINET - Isolated - Yes - automatic detection of transmission rate - Autornogotiation - Yes - Ruitor of yes - Ruiter face type - Ruiter face face face face face face face face
Services - PG/OP communication - Routing - Routing - Global data communication - S7 basic communication - S7 basic communication - S7 basic communication - S7 communication - S7 communication - S7 communication, as client - S7 communication, as server - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - No Transfer memory - Inputs - Outputs - Outputs - Outputs - Outputs - Outputs - Outputs - PROFINET - Isolated - Ves - automatic detection of transmission rate - Ves; 10/100 Mbit/s - Autoreosing - Yes - Ru 45 (Ethernet) - No
PG/OP communication Routing Ro
Routing Yes; Only with active interface Global data communication ST basic communication ST possic communication ST communication, as client ST communication, as server Per Communication Per PROFINET Per Controller Per Communication Per PROFINET Per Controller Per Communication Per PROFINET Per Communication Per Communication Per PROFINET Per Communication Per PROFINET Per Communication Per PROFINET Per PROFINET Per Communication Per PROFINET Per PROFINET Per PROFINET Per Communication Per PROFINET Per Profined Per PROFINET Per Profined
- Global data communication - S7 basic communication - S7 communication - S7 communication, as client - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - Direct data exchange (slave-to-slave communication) - DPV1 - Inputs - Outputs - Outputs - Outputs - Outputs - Ves - Interface bye - Buttomatic detection of transmission rate - Autornospitation - Yes - Autornospitation - Ves -
— S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No Transfer memory — Inputs — Outputs 244 byte — Outputs 224 byte — Outputs 224 byte 22. Interface Interface type Isolated automatic detection of transmission rate Autorcossing Autorcossing Change of IP address at runtime, supported Interface types • RI 45 (Ethemet) • Number of ports • Integrated switch PROFINET IO Controller • PROFINET IO Controller • PROFIBUS DP master • PROFIBUS DP device • PROFIBUS DP device • Open IE communication • Wes PROFINET IO Controller • PROFINET GO Controller • PROFINET GO Controller • PROFINET GO Controller • PROFINET GO Controller • PROFIBUS DP device • Open IE communication • Wes • Media redundancy • Yes PROFINET IO Controller • Transmission rate, max. 100 Mbit/s Services — PG/OP communication • Yes PROFINET IO Controller • Transmission rate, max. 100 Mbit/s Services — PG/OP communication • Yes • With loadable FBs, max. configurable connections: 14, max. number of instances: 32 — Isochronous mode
- Direct data exchange (slave-to-slave communication) - DPV1 No Transfer memory - Inputs 244 byte - Outputs 244 byte 2. Interface Interface WP Interface WP Autonogoliation Yes automatic detection of transmission rate Yes; 10/100 Mbit/s Autonogoliation Yes Autorossing Yes Change of IP address at runtime, supported Yes Interface types • RJ 45 (Ethernet) Yes • Interface sypes • RJ 45 (Ethernet) Yes • Interface sypes • PROFINET IO Controller Yes; Also simultaneously with IO-Device functionality • PROFINET IO Device Yes; Also simultaneously with IO Controller functionality • PROFIBUS DP master No • PROFIBUS DP device No • Open IE communication Yes; Via TCP/IP, ISO on TCP, and UDP • Media redundancy Yes PROFINET IO Controller • Transmission rate, max. 100 Mbit/s Services - PGOP communication Yes • Tooling Yes - Routing Yes - PROFINET IO Controller • Transmission rate, max. 100 Mbit/s - Services - PGOP communication Yes - Routing Yes - Routing Yes - Routing Yes - Sor communication Yes - Routing Yes - Sor communication Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 - Instances: 32 - Instances: 32 - Routing Yes - Sor communication Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 - Instances: 32 - Routing Yes - Sor communication Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 - Instances: 32 - Routing Yes - Routing Yes - Sor communication Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 - Routing Yes - Routing
communication) DPV1 Transfer memory - Inputs - Outputs 244 byte 244 byte 244 byte 245 byte 246 byte Interface lype Interface lype Isolated Autonegolitation Yes Autorossing Yes Change of IP address at runtime, supported Interface lypes • R14 55 (Ethernet) • No • Number of ports • RUMber of ports • PROFINET IO Controller • PROFINET IO Controller • PROFINET IO Device • PROFIBUS DP master • PROFIBUS DP device • Open IE communication • Wes PROFINET IO Controller • Yes; Via TCP/IP, ISO on TCP, and UDP • Web server • Media redundancy • Yes PROFINET IO Contmulier • Transmission rate, max. 100 Mbit/s Services - PG/OP communication Yes - Routing - S7 communication Yes - S7 communication Yes - S7 communication Yes - Wes - St isochronous mode - So 65 isochronous mode can only be used alternatively on PROFIBUS - Yes - S6 61; isochronous mode can only be used alternatively on PROFIBUS
Transfer memory - Inputs - Outputs 244 byte 2. Interface Interface type Isolated Isolated Autonegotiation Autocrossing Autocrossing Change of IP address at runtime, supported Interface types • RJ 45 (Ethernet) • Yes • Number of ports • integrated switch Protocols • MPI • PROFINET IO Controller • PROFINET IO Device • PROFINET GBA • PROFIBUS DP master • PROFIBUS DP device • Open IE communication • Wes services • Media redundancy • Yes • Media redundancy • PROFINET IO Controller • Transmission rate, max. Services - PG/OP communication • Yes - S7 communication • Yes - Wes - Wes Halva Industry and UDP - Yes - Sr communication • Yes - Yes - Sr communication • Yes -
Transfer memory - Inputs - Outputs 244 byte 2. Interface Interface type Isolated Isolated Autonegotiation Autocrossing Autocrossing Change of IP address at runtime, supported Interface types • RJ 45 (Ethernet) • Yes • Number of ports • integrated switch Protocols • MPI • PROFINET IO Controller • PROFINET IO Device • PROFINET GBA • PROFIBUS DP master • PROFIBUS DP device • Open IE communication • Wes services • Media redundancy • Yes • Media redundancy • PROFINET IO Controller • Transmission rate, max. Services - PG/OP communication • Yes - S7 communication • Yes - Wes - Wes Halva Industry and UDP - Yes - Sr communication • Yes - Yes - Sr communication • Yes -
Inputs Outputs -
- Outputs 2. Interface Interface type Interface type Isolated Yes automatic detection of transmission rate Autorossing Change of IP address at runtime, supported Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch PROFINET IO Controller • PROFINET IO Device • PROFIBUS DP master • PROFIBUS DP device • Open IE communication • Wesi vas in the side of th
Interface type
Interface type PROFINET Isolated Yes automatic detection of transmission rate Yes; 10/100 Mbit/s Autonegotiation Yes Autocrossing Yes Change of IP address at runtime, supported Yes Interface types RJ 45 (Ethernet) Yes Number of ports 2 Integrated switch Yes Protocols MPI No PROFINET IO Controller Yes; Also simultaneously with IO-Device functionality PROFINET to BA PROFIBUS DP master PROFIBUS DP master PROFIBUS DP device No PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services PG/OP communication Yes PROFINET IO Controller PG/OP communication Yes PS/PS/OP communication Yes
Isolated automatic detection of transmission rate Autonegotiation Autocrossing Change of IP address at runtime, supported Yes Change of IP address at runtime, supported Yes Interface types • RJ 45 (Ethernet) • Number of ports • integrated switch Protocols • MPI • PROFINET IO Controller • PROFINET IO Device • PROFINET OBA • PROFIBUS DP master • PROFIBUS DP device • PROFIBUS DP device • Open IE communication • Web server • Media redundancy PROFINET IO Controller • Transmission rate, max. 100 Mbit/s Services — PG/OP communication Yes Yes With loadable FBs, max. configurable connections: 14, max. number of instances: 32 — Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
automatic detection of transmission rate Autoregotiation Autocrossing Change of IP address at runtime, supported Yes Interface types R J 45 (Ethernet) Number of ports Integrated switch PROFINET IO Controller PROFINET OB De vice PROFIBUS DP master PROFIBUS DP device Open IE communication Wes Media redundancy PROFINET IO Controller Wes Also simultaneously with IO Controller functionality Yes No PROFIBUS DP device Open IE communication Wes are Ves PROFINET IO Controller Yes; Via TCP/IP, ISO on TCP, and UDP Yes PROFINET IO Controller Yes PROFINET IO Controller Yes Yes PROFINET IO Controller Yes; Via TCP/IP, ISO on TCP, and UDP Yes PROFINET IO Controller Yes PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services PC/OP communication Yes Yes Yes With loadable FBs, max. configurable connections: 14, max. number of instances: 32 Heschronous mode Yes; Wist isochronous mode can only be used alternatively on PROFIBUS
Autocrossing Autocrossing Change of IP address at runtime, supported Pres Interface types • RJ 45 (Ethernet) • Number of ports • Number of ports • Number of ports • MPI • PROFINET IO Controller • PROFINET IO Controller • PROFINET IO Device • PROFINET IO BA • PROFIBUS DP master • PROFIBUS DP device • Open IE communication • Wes server • Media redundancy PROFINET IO Controller • Transmission rate, max. Services - PG/OP communication - Routing - S7 communication - Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 - Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS - PROFIBUS - PROFIBUS - PROFIBUS - PROFIBUS - PROFIDUS - Isochronous mode - PROFIBUS - PROFIBUS - PROFIBUS - PROFIDUS - Isochronous mode - PROFIBUS -
Autocrossing Change of IP address at runtime, supported Interface types • RJ 45 (Ethernet) • Number of ports • Number of ports • Integrated switch Protocols • MPI • PROFINET IO Controller • PROFINET IO Controller • PROFINET IO BA • PROFIBUS DP master • PROFIBUS DP master • PROFIBUS DP device • Open IE communication • Web server • Media redundancy PROFINET IO Controller • Transmission rate, max. Services - PG/OP communication - Routing - S7 communication - Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 - Isochronous mode - Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
Change of IP address at runtime, supported Interface types • RJ 45 (Ethernet) • Number of ports • Number of ports • Integrated switch Protocols • MPI • PROFINET IO Controller • PROFINET OBA • PROFIBUS DP master • PROFIBUS DP device • Open IE communication • Web server • Media redundancy PROFINET IO Controller • Yes; Also simultaneously with IO-Device functionality Yes Also simultaneously with IO Controller functionality Yes • PROFIBUS DP master • No • PROFIBUS DP device • No • Open IE communication • Yes; Via TCP/IP, ISO on TCP, and UDP • Web server • Media redundancy PROFINET IO Controller • Transmission rate, max. 100 Mbit/s Services - PG/OP communication Yes - Routing - S7 communication Yes - S7 communication - S9 (With loadable FBs, max. configurable connections: 14, max. number of instances: 32 - Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
Interface types • RJ 45 (Ethernet) • Number of ports • Number of ports • integrated switch Protocols • MPI • PROFINET IO Controller • PROFINET IO Device • PROFIBUS DP master • PROFIBUS DP device • Open IE communication • Web server • Media redundancy PROFINET IO Controller • Transmission rate, max. Services - PG/OP communication - Routing - S7 communication - S7 communication - Pess (With loadable FBs, max. configurable connections: 14, max. number of instances: 32 - Isochronous mode Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 - Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
 R2 45 (Ethernet) Number of ports integrated switch Yes Protocols MPI PROFINET IO Controller PROFINET IO Device PROFINET GBA PROFIBUS DP master PROFIBUS DP device PROFIBUS DP device Open IE communication Web server Media redundancy Media redundancy PROFINET IO Controller Transmission rate, max. PROFINET IO Controller Transmission rate, max. PROFIDED SP, max. Modable FBs, max. configurable connections: 14, max. number of instances: 32 — Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
 Number of ports integrated switch Yes Protocols MPI PROFINET IO Controller PROFINET IO Device PROFINET CBA PROFIBUS DP master PROFIBUS DP device Open IE communication Web server Media redundancy Media redundancy Transmission rate, max. PG/OP communication Transmission rate, max. PG/OP communication Yes PG/OP communication Yes PROFIDED SDP device Mo Open IE communication Yes; Via TCP/IP, ISO on TCP, and UDP Yes Media redundancy Yes PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services PG/OP communication Yes Routing Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 Isochronous mode Isochronous mode on only be used alternatively on PROFIBUS
integrated switch Protocols MPI PROFINET IO Controller PROFINET IO Device PROFINET BA PROFIBUS DP master PROFIBUS DP device Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Services PG/OP communication PG/OP communication PS/ St. With Ioadable FBs, max. configurable connections: 14, max. number of instances: 32 Psc No Ves; Vis or TCP/ID, ISO on TCP, and UDP Yes No No No Ves; Via TCP/IP, ISO on TCP, and UDP Yes PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services PG/OP communication Yes Ves Ves Ves Ves Ves Ves Profined FBs, max. configurable connections: 14, max. number of instances: 32 Ves; OB 61; isochronous mode can only be used alternatively on PROFIBUS
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MPI PROFINET IO Controller Yes; Also simultaneously with IO-Device functionality PROFINET IO Device PROFINET CBA PROFIBUS DP master PROFIBUS DP device Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Services — PG/OP communication — Routing — S7 communication Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 — Isochronous mode Yes; Also simultaneously with IO-Device functionality Yes; Also simultaneously with IO-Device functionality Yes; Also simultaneously with IO-Device functionality Yes IO Mbit/S PROFIBUS DP device No Yes; Via TCP/IP, ISO on TCP, and UDP Yes Yes PROFINET IO Controller Yes Transmission rate, max. 100 Mbit/s Services — PG/OP communication Yes — PG/OP communication Yes — S7 communication Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 — Isochronous mode
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 PROFINET IO Device PROFINET CBA PROFIBUS DP master PROFIBUS DP device Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Services PG/OP communication Yes Yes PG/OP communication Yes Yes PG/OP communication Yes PS7 communication Yes Yes Yes With loadable FBs, max. configurable connections: 14, max. number of instances: 32 Psochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
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 PROFIBUS DP master PROFIBUS DP device Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Services PG/OP communication Routing S7 communication Yes Yes Yes Yes Yes Yes Services PG/OP communication For the properties of the properties of
 PROFIBUS DP device Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Services — PG/OP communication — Routing — S7 communication — S7 communication — S8, max. configurable connections: 14, max. number of instances: 32 — Isochronous mode — POFIBUS
 Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Services — PG/OP communication — Routing — S7 communication — S7 communication — Isochronous mode Yes; Via TCP/IP, ISO on TCP, and UDP Yes Yes Transmission rate, max. 100 Mbit/s Yes Yes Yes Yes Yes Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
 Web server Media redundancy Yes PROFINET IO Controller Transmission rate, max. Services — PG/OP communication — Routing — S7 communication — Yes — S7 communication — Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 — Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
● Media redundancy PROFINET IO Controller ● Transmission rate, max. Services - PG/OP communication - Routing - S7 communication Yes - S7 communication Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 - Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
PROFINET IO Controller ● Transmission rate, max. Services — PG/OP communication — Routing — S7 communication Yes — S8; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 — Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
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Services - PG/OP communication - Routing - S7 communication - S7 communication - S8 With loadable FBs, max. configurable connections: 14, max. number of instances: 32 - Isochronous mode - Services - Yes - Yes - Yes - Yes - Yes - OB 61; isochronous mode can only be used alternatively on PROFIBUS
 — PG/OP communication — Routing — S7 communication — S8; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 — Isochronous mode — Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
 Routing S7 communication Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
 — S7 communication — Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32 — Isochronous mode — Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
instances: 32 — Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
— IRT Yes
— Shared device Yes
— Prioritized startup Yes
— Number of IO devices with prioritized startup, max.
— Number of connectable IO Devices, max.
— Of which IO devices with IRT, max.
— of which in line, max.
— Number of IO Devices with IRT and the option "high flexibility"
— of which in line, max.
— Number of connectable IO Devices for RT, max. 128

Activation/deactivation of IO Devices	Yes
 Number of IO Devices that can be simultaneously activated/deactivated, max. 	8
 — IO Devices changing during operation (partner ports), supported 	Yes
 Number of IO Devices per tool, max. 	8
 Device replacement without swap medium 	Yes
— Send cycles	$250~\mu s, 500~\mu s, 1~ms;~2~ms,~4~ms$ (not in the case of IRT with "high flexibility" option)
— Updating time	250 µs to 512 ms (depending on the operating mode, see Manual "S7-300 CPU 31xC and CPU 31x, technical Data" for more details)
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 kbyte
User data consistency, max.	1 024 byte
PROFINET IO Device	
Services	
 PG/OP communication 	Yes
— Routing	Yes
— S7 communication	Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32
— Isochronous mode	No
— IRT	Yes
— PROFlenergy	Yes; With SFB 73 / 74 prepared for loadable PROFlenergy standard FB for I-Device
— Shared device	Yes
 Number of IO Controllers with shared device, max. 	2
Transfer memory	
— Inputs, max.	1 440 byte; Per IO Controller with shared device
— Outputs, max.	1 440 byte; Per IO Controller with shared device
Submodules	
— Number, max.	64
User data per submodule, max.	1 024 byte
PROFINET CBA	
acyclic transmission	Yes
cyclic transmission	Yes
Open IE communication	
Number of connections, max.	8
Local port numbers used at the system end	0, 20, 21, 23, 25, 80, 102, 135, 161, 443, 8080, 34962, 34963, 34964, 65532, 65533, 65534, 65535
Keep-alive function, supported	Yes
Protocols	
PROFIsafe	No
Redundancy mode	
Media redundancy	
Switchover time on line break, typ.	200 ms; PROFINET MRP
Number of stations in the ring, max.	50
Open IE communication	
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
Number of connections, max.	8
Data length for connection type 01H, max.	1 460 byte
Data length for connection type of H, max. Data length for connection type 11H, max.	32 768 byte
— bata length for connection type TTH, max. — several passive connections per port, supported	
— several passive confiscions per port, supported	Yes
■ ISO-on-TCP (REC1006)	Yes Ves: via integrated PROFINET interface and loadable FRs
ISO-on-TCP (RFC1006) Number of connections, may	Yes; via integrated PROFINET interface and loadable FBs
— Number of connections, max.	Yes; via integrated PROFINET interface and loadable FBs
— Number of connections, max.— Data length, max.	Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte
— Number of connections, max.— Data length, max.• UDP	Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs
 Number of connections, max. Data length, max. UDP Number of connections, max. 	Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 8
 — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. 	Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs
 Number of connections, max. Data length, max. UDP Number of connections, max. Data length, max. Web server	Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 8 1 472 byte
 Number of connections, max. Data length, max. UDP Number of connections, max. Data length, max. Web server supported 	Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 8 1 472 byte Yes
 Number of connections, max. Data length, max. UDP Number of connections, max. Data length, max. Web server	Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 8 1 472 byte

communication functions / header	
PG/OP communication	Yes
Data record routing	Yes
Global data communication	
supported	Yes
 Number of GD loops, max. 	8
 Number of GD packets, max. 	8
 Number of GD packets, transmitter, max. 	8
 Number of GD packets, receiver, max. 	8
 Size of GD packets, max. 	22 byte
 Size of GD packet (of which consistent), max. 	22 byte
S7 basic communication	
supported	Yes
 User data per job, max. 	76 byte
User data per job (of which consistent), max.	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)
S7 communication	
• supported	Yes
• as server	Yes
• as client	Yes; via integrated PROFINET interface and loadable FB or via CP and loadable FB
User data per job, max.	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)
S5 compatible communication	
• supported	Yes; via CP and loadable FC
communication functions / PROFINET CBA (with set target commu	
 Setpoint for the CPU communication load 	50 %
 Number of remote interconnection partners 	32
 number of master/device functions 	30
 total of all master/device connections 	1 000
 data length of all incoming master/device connections, max. 	4 000 byte
 data length of all outgoing master/device connections, max. 	4 000 byte
Number of device-internal and PROFIBUS interconnections	500
Data length of device-internal und PROFIBUS interconnections, max.	4 000 byte
Data length per connection, max. ORDERNET CRA (connected interest and details)	1 400 byte
performance data / PROFINET CBA / remote interconnection /	
— Sampling interval, min.	500 ms
Number of outgoing interconnections	100
Number of outgoing interconnections Pate length of all incoming interconnections may	100
Data length of all incoming interconnections, max.	2 000 byte
Data length of all outgoing interconnections, max.	2 000 byte
 — data volume / as user data for remote interconnections / in the case of acyclic transmission / with PROFINET CBA / per connection / maximum 	1 400 byte
performance data / PROFINET CBA / remote interconnection	/ with cyclic transfer / header
— Transmission frequency: Transmission interval, min.	10 ms
 Number of incoming interconnections 	200
 Number of outgoing interconnections 	200
 Data length of all incoming interconnections, max. 	2 000 byte
 Data length of all outgoing interconnections, max. 	2 000 byte
 data volume / as user data for remote interconnections / with cyclical transfer / with PROFINET CBA / per connection / maximum 	450 byte
performance data / PROFINET CBA / HMI variables via PROF	INET / acyclic / header
Number of stations that can log on for HMI variables (PN OPC/iMap)	3; 2x PN OPC/1x iMap
HMI variable updating	500 ms
Number of HMI variables	200
Data length of all HMI variables, max.	2 000 byte
performance data / PROFINET CBA / PROFIBUS proxy function	•

— supported	Yes
Number of linked PROFIBUS devices	16
Data length per connection, max.	240 byte; Slave-dependent
Number of connections	
• overall	16
 usable for PG communication 	15
 reserved for PG communication 	1
 adjustable for PG communication, min. 	1
 adjustable for PG communication, max. 	15
 usable for OP communication 	15
 reserved for OP communication 	1
 adjustable for OP communication, min. 	1
 adjustable for OP communication, max. 	15
 usable for S7 basic communication 	14
 reserved for S7 basic communication 	0
 adjustable for S7 basic communication, min. 	0
 adjustable for S7 basic communication, max. 	14
usable for S7 communication	14
 reserved for S7 communication 	0
adjustable for S7 communication, min.	0
adjustable for S7 communication, max.	14
total number of instances, max.	32
usable for routing	X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max.
07	14; X2 as PROFINET: 24 max.
S7 message functions	40. Describer on the confirmed connections for DO/OD and O7 having
Number of login stations for message functions, max.	16; Depending on the configured connections for PG/OP and S7 basic communication
Process diagnostic messages	Yes
simultaneously active Alarm-S blocks, max.	300
Test commissioning functions	
Status block	Yes; Up to 2 simultaneously
Single step	Yes
Number of breakpoints	4
Status/control	
Status/control variable	Yes
 Variables 	Inputs, outputs, memory bits, DB, times, counters
 Number of variables, max. 	30
— of which status variables, max.	30
— of which control variables, max.	14
Forcing	
Forcing	Yes
ForcingForcing, variables	Yes Inputs, outputs
• Forcing, variables	Yes Inputs, outputs 10
Forcing, variablesNumber of variables, max.	Inputs, outputs
Forcing, variablesNumber of variables, max.Diagnostic buffer	Inputs, outputs
 Forcing, variables Number of variables, max. Diagnostic buffer present 	Inputs, outputs 10 Yes
 Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. 	Inputs, outputs 10
 Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. — adjustable 	Inputs, outputs 10 Yes 500 No
 Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. — adjustable — of which powerfail-proof 	Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained
 Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. — adjustable — of which powerfail-proof Number of entries readable in RUN, max. 	Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499
 Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. — adjustable — of which powerfail-proof Number of entries readable in RUN, max. — adjustable 	Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499 Yes; From 10 to 499
 Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. — adjustable — of which powerfail-proof Number of entries readable in RUN, max. — adjustable — preset 	Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499
Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. adjustable of which powerfail-proof Number of entries readable in RUN, max. adjustable preset Service data	Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499 Yes; From 10 to 499 10
Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. adjustable of which powerfail-proof Number of entries readable in RUN, max. adjustable preset Service data can be read out	Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499 Yes; From 10 to 499
Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. adjustable of which powerfail-proof Number of entries readable in RUN, max. adjustable preset Service data can be read out Ambient conditions	Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499 Yes; From 10 to 499 10
Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. adjustable of which powerfail-proof Number of entries readable in RUN, max. adjustable preset Service data can be read out Ambient conditions Ambient temperature during operation	Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499 Yes; From 10 to 499 10 Yes
Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. adjustable of which powerfail-proof Number of entries readable in RUN, max. adjustable preset Service data can be read out Ambient conditions Ambient temperature during operation min.	Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499 Yes; From 10 to 499 10 Yes
Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. adjustable of which powerfail-proof Number of entries readable in RUN, max. adjustable preset Service data can be read out Ambient conditions Ambient temperature during operation min. max.	Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499 Yes; From 10 to 499 10 Yes
Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. adjustable of which powerfail-proof Number of entries readable in RUN, max. adjustable preset Service data can be read out Ambient conditions Ambient temperature during operation min. max. configuration / header	Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499 Yes; From 10 to 499 10 Yes
Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. adjustable of which powerfail-proof Number of entries readable in RUN, max. adjustable preset Service data can be read out Ambient conditions Ambient temperature during operation min. max. configuration / header Configuration software	Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499 Yes; From 10 to 499 10 Yes 0 °C 60 °C
Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. adjustable of which powerfail-proof Number of entries readable in RUN, max. adjustable preset Service data can be read out Ambient conditions Ambient temperature during operation min. max. configuration / header	Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499 Yes; From 10 to 499 10 Yes

 Command set 	see instruction list
 Nesting levels 	8
 System functions (SFC) 	see instruction list
 System function blocks (SFB) 	see instruction list
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
Know-how protection	
 User program protection/password protection 	Yes
 Block encryption 	Yes; With S7 block Privacy
Dimensions	
Width	40 mm
Height	125 mm
Depth	130 mm
Weights	
Weight, approx.	340 g

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