SIEMENS

Data sheet

6ES7315-2EH14-0AB0



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 A ² ·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	
• Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
OB	
• 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
 per pronty class additional within an error OB 	4
Counters, timers and their retentivity	T
S7 counter	
Number	256
Retentivity	200
— adjustable	Yes
— preset	Z 0 to Z 7
Counting range	
— adjustable	Yes
— lower limit	0
— upper limit	999
IEC counter	
● present	Yes
• Туре	SFB
Number	Unlimited (limited only by RAM capacity)
S7 times	
Number	256
Retentivity	
— adjustable	Yes
— preset	No retentivity
Time range	
- time range / of the S7 timers / initial value	10 ms
— time range / of the S7 timers / full-scale value	9 990 s
IEC timer	
present	Yes
• Туре	SFB
Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	128 kbyte
Flag	
• Size, max.	2 048 byte
Retentivity available	Yes; MB 0 to MB 2 047
Retentivity preset	MB 0 to MB 15
Number of clock memories	8; 1 memory byte
Data blocks	
Retentivity adjustable	Yes; via non-retain property on DB

Retentivity preset	Yes
Local data	
per priority class, max.	32 768 byte; Max. 2048 bytes per block
Address area	
I/O address area	
• Inputs	2 048 byte
Outputs	2 048 byte
of which distributed	,
— 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	2
Number of expansion units, max.	3
Number of DP masters	1
 integrated via CP 	4
Number of operable FMs and CPs (recommended)	4
• FM	8
• CP, PtP	8
• CP, LAN	10
Rack	
Racks, max.	4
Modules per rack, max.	8
Time of day	
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
supportedto MPI, master	Yes
supported	

• to DP, slave	Yes
• in AS, master	Yes
• in AS, slave	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	
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	
Interface type	Integrated RS 485 interface
Isolated	Yes
Interface types	
• RS 485	Yes
 Output current of the interface, max. 	200 mA
Protocols	
• MPI	Yes
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes
 Point-to-point connection 	No
MPI	
 Transmission rate, max. 	12 Mbit/s
Services	
— 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	Yes
PROFIBUS DP master	40 MIL-14
Transmission rate, max.	12 Mbit/s 124
Number of DP slaves, max.	124
Services — PG/OP communication	Yes
— PG/OP communication — Routing	Yes
— Roung — Global data communication	No
- S7 basic communication	Yes; I blocks only
- S7 basic communication	Yes
— S7 communication, as client	No
— S7 communication, as crient	Yes
— 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 slaves 	Yes
 — Number of DP slaves that can be simultaneously activated/deactivated, max. 	8
 — Direct data exchange (slave-to-slave communication) 	Yes; as subscriber
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte

— Outputs, max.	2 kbyte
User data per DP slave	2441.4
— Inputs, max.	244 byte
— Outputs, max.	244 byte
PROFIBUS DP slave	
 Transmission rate, max. 	12 Mbit/s
 automatic baud rate search 	Yes; only with passive interface
 Address area, max. 	32
 User data per address area, max. 	32 byte
Services	
— PG/OP communication	Yes
— Routing	Yes; Only with active interface
 — Global data communication 	No
 — S7 basic communication 	No
- S7 communication	Yes
- S7 communication, as client	No
- S7 communication, as server	Yes; Connection configured on one side only
 — Direct data exchange (slave-to-slave communication) 	Yes
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
2. Interface	
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 IO Device	Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA	Yes
PROFIBUS DP master	No
PROFIBUS DP slave	No
Open IE communication	Yes; Via TCP/IP, ISO on TCP, and UDP
Web server	Yes
Media redundancy	Yes
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	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 DP or PROFINET IO
— IRT	Yes
- Shared device	Yes
- Prioritized startup	Yes
— Number of IO devices with prioritized startup, max.	32
- Number of connectable IO Devices, max.	128
— Of which IO devices with IRT, max.	64
— of which in line, max.	64
— Number of IO Devices with IRT and the option "high	128
flexibility"	

- of which is line, max. - of which is line, max. 128 - of which is line, max. 128 - of which is line, max. 128 - Advisorbideschwist max. - Number of IC Devices that can be an utaneously advised Sections of IC Devices - Number of IC Devices that can be an utaneously advised Sections of IC Devices - Number of IC Devices that can be an utaneously advised Sections - Number of IC Devices that can be an utaneously - Devices character which is seen from the case of IRT with "high flexibility" option, supported - Number of IC Devices that can be an utaneously - Devices character which is seen from the case of IRT with "high flexibility" option, supported - Inputs, max. - Section CPU as (does per foot, max. - Device character which is seen from the case of IRT with "high flexibility" option, supported - Device character which is seen from the case of IRT with "high flexibility" option, max. - Device character which is seen from the case of IRT with "high flexibility" option, max. - Inputs, max. - Device character which is seen from the case of IRT with "high flexibility" option - Device character which is seen from the case of IRT with "high flexibility" option - Device character which is seen from the case of IRT with "high flexibility" option - Device character which is seen from the case of IRT with "high flexibility" option - Device character which is seen from the case of IRT with "high flexibility" option - ProCPI communication - Solution - Device character which are advise, max - Transfer memory - Shared device - Shared device - Onlipuits, max. - Device frameway - Device character with a frame device, max - Device character with a frame device, max - Device character - Number of adcronduler, max - Dev		
		61
- Activation/Generation or to environmentaneously extended/deach/subject on the environmentaneously extended/deach/subject on the environmentaneously extended/deach/subject on the environmentaneously extended/deach/subject on the extended in the extended in the extended in the extended in the extended/deach/subject on the extended in the ext		
 Jumps of 10 Devices hardware manuaneously and the set of the set		
- Number of IOD Evices per tool, max. 8 - Device replacement without swap medium Yes - Send cycles 220 (ps. 500 ps.1 ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option) - Updating time 220 (ps. 100 ps.1 ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option) - Updating time 220 (ps. 100 ps.1 ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option) - Updating time 220 (ps. 100 ps.1 ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option) - Updating time 220 (ps. 10 ps.1 ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option) - Updating time 220 (ps. 10 ps.1 ms; 2 ms, 4 ms (not in the case of IRT with "high flexibility" option) - Updating time 2 ktype - Updating time 2 ktype - Used case consistency, max. 1 024 byte - Rouring Yes - Rouring Yes - Isochronous mode No - Isochronous mode No - Isochronous mode Yes - Used toronous mode Yes - Induts, max. 1 440 byte: Per IO Controller with shared device - Used toronous mode Yes - Indut		8
- Oexice reglacement without swap medium - Send cycles - Send cycles - Send cycles - Send cycles - Outpating time - Send cycles - Outpating time - Updating ti		Yes
	 — Number of IO Devices per tool, max. 	8
option) 250 pto 16 12 ms (depending on the operating mode, see Manual %7.300 CPU 31x2 and CPU 31x, technical Data? for more details) Address area - Inputs, max. 2 kby/e - Outputs, max. 1 242 by/e - Outputs, max. 1 242 by/e PROFINET ID Device - Services - - FGOP communication Yes - Fouring Yes - S7 communication Yes - Isochronous mode No - IRT Yes - BROFlenergy Yes (With loadable FBS, max. configurable connections: 14, max. number of Instances: 32 - Isochronous mode No - IRT Yes - BROFlenergy Yes (With SEP 73 / 74 prepared for loadable PROFlenergy standard FB for I-Device - Stated device Yes - Munber of IO Controllers with shared device, max. 2 - Transfer memory 1 440 by/e; Per IO Controller with shared device - Outputs, max. 1 440 by/e; Per IO Controller with shared device - Outputs, max. 1 440 by/e; Per IO Controller with shared device - Outputs, max. 1 440 by/e; Per IO Controller with shared device - Outputs, max. 1 440 by/e; Per IO Controller with shared device - User data per submodule, max. 1 400 by/e PROFINET I Obevice Se <	 Device replacement without swap medium 	Yes
31xC and CPU 31x, technical Data" for more details) Address area - Inputs, max. 2 kbyre - Outputs, max. 1 (24 byre - Outputs, max. 1 (24 byre - ReCIPC communication Yes - Rauling Yes - Rauling Yes - Isochronous mode No - IRT Yes - RROFIenergy Yes - RROFIEnergy Yes - Shared dovice Yes - Shared dovice Yes - Shared dovice Yes - Instrumber of Lochtrollars with shared device, max. 2 - Shared dovice Yes - Number of Lochtrollars with shared device, max. 2 - Number of Lochtrollars with shared device, max. 2 - Outputs, max. 1 440 byte; Per IO Controller with shared device - Outputs, max. 1 440 byte; Per IO Controller with shared device - Outputs, max. 1 024 byte - ReOFINET IO device max - Starmodules 64 - ReOFINET IO device / maximum 1 024 byte - Ves data per submodule, max. 1 024 byte PROFINET IO device / maximum 8 - User data per submodule, max. 8 - Social formunication Yes	— Send cycles	
- Inputs, max. 2 ktyle - Outputs, max. 2 ktyle - Use data consistency, max. 2 ktyle PROFINET IO Device	— Updating time	
 Diguls, max. User data consistency, max. 1024 byte PROFINET IO Beace Services PROP communication Routing Services PROP communication Services Servis an service value service value service value services value	Address area	
— User data consistency, max. 1 024 byte PROFINET IO Device	— Inputs, max.	2 kbyte
PROFINET IO Device Services - PC/OP communication Yes - Routing Yes - S7 communication Yes - Intra Yes - Isochronous mode No - IRT Yes - PROFIenergy Yes: With loadable FBs, max. configurable connections: 14, max. number of instances: 32 - IRT Yes - PROFIenergy Yes: With SER 73 / 74 prepared for loadable PROFIenergy standard FB for I-Device - Shared device Yes - Number of IO Controllers with shared device, max. 2 Transfer memory 1 440 byte; Per IO Controller with shared device - Outputs, max. 1 440 byte; Per IO Controller with shared device Submodules 64 - Outputs, max. 1024 byte - User data per submodule, max. 1024 byte PROFINET IO device / maxmum 2 - scyclic transmission Yes • cocal port numbers used at the system end 63, 0, 21, 21, 23, 25, 80, 102, 135, 161, 443, 8080, 34983, 34984, 65532, 6553, 6553 • Keep-alive function, supported Yes Protocols No Redundancy 50	— Outputs, max.	2 kbyte
Services - PcUf0 communication Yes - Routing Yes - S7 communication Yes (With loadable FBs, max. configurable connections: 14, max. number of instances: 32 - Isochronous mode No - IRT Yes - PROFlemergy Yes - Shared device Yes - Number of Io Controllers with shared device, max 2 Transfer memory - - Intly, max. 1 440 byte; Per IO Controller with shared device - Outputs, max. 1 440 byte; Per IO Controller with shared device - Outputs, max. 1 440 byte; Per IO Controller with shared device - number of submodules / at the 2nd interface / as 64 PROFINET IO EA 1024 byte e cyclic transmission Yes • cyclic transmission Yes • Used 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 • Recendency mode Yes Protocols Yes	— User data consistency, max.	1 024 byte
	PROFINET IO Device	
Routing Yes S7 communication Yes; With loadable FBs, max. configurable connections: 14, max. number of instances: 32	Services	
	— PG/OP communication	Yes
Instances: 32 Instances: 32 Instances: 32 Instances: 32 Instances: 32 Instances: 32 IRT Yes IRT Yes PROFInergy Yes: With SFB 73 / 74 prepared for loadable PROFInergy standard FB for I- Device Shared device Yes - Number of IO Controllers with shared device, max. 2 Transfer memory 1 440 byte; Per IO Controller with shared device - Inputs, max. 1 440 byte; Per IO Controller with shared device - Outputs, max. 1 440 byte; Per IO Controller with shared device - User data per submodules / at the 2nd interface / as PROFINET IO device / maximum 64 PROFINET IO device / maximum 1024 byte PROFINET IO device / maximum Yes Open IE communication Yes • Local port numbers used at the system end 6532, 6535, 6535 • Keep-alive function, supported Yes Protocols Protocols Protocols Yes Open IE communication 8 • Number of connections, max. 8 • Data length for connection type 011H, max. 200 ms; PROFINET Interface and loadable FBs • Number of connections, max. 8 • Data length for connection type 01H, max. 200 ms; PROFINET Interface and loadable FBs • Num	— Routing	Yes
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 Outputs, max. 1 440 byte; Per IO Controller with shared device number of submodules / at the 2nd interface / as 64 PROFINET CBA 64 outputs, max. 1 024 byte PROFINET CBA - outputs, max. 1 024 byte PROFINET CBA Yes - oupcit transmission Yes - oupcit transmission Yes Open IE communication Yes - Local port number used at the system end 0, 20, 21, 23, 25, 80, 102, 135, 161, 443, 8080, 34962, 34963, 34964, 65532, 6533,	— S7 communication	
PROFInergy Yes: With SFB 73 / 74 prepared for loadable PROFInergy standard FB for I- Device Shared device Yes Number of Io Controllers with shared device, max. 2 Transfer memory 1 440 byte; Per IO Controller with shared device Outputs, max. 1 440 byte; Per IO Controller with shared device Outputs, max. 1 440 byte; Per IO Controller with shared device Submodules 64 Outputs, max. 1 024 byte Outputs, max. 1 024 byte PROFINET CBA 7es oycilc transmission Yes PROFINET CBA 8 oycilc transmission Yes Protocol Yes Protocol Yes PROFIsafe No Redurdancy mode Yes Switchover time on line break, typ. 200 ms; PROFINET MRP Number of connections, max. 8 Data length for connection type 114, max. 32 fo8 byte Switchover time on line break, typ. 200 ms; PROFINET Interface and load	 — Isochronous mode 	No
Bevice Device Terms and the set of the	— IRT	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 of submodules / at the 2nd interface / as PROFINET IO device / maximum 64 User data per submodule, max. 1 024 byte PROFINET CBA - • exp(ic transmission Yes • cyclic transmission Yes • User data per submodule, 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, 65535 • Keep-alive function, supported Yes PROFINET Yes PROFINET 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, 65535 • Keep-alive function, supported Yes PROFIsafe No Redundancy mode - Media redundancy - - Number of stations in the ring, max. 50 Open IE communication 8 -	- PROFlenergy	
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 of submodules / at the 2nd interface / as PROFINET IO device / maximum - User data per submodule, max. 1024 byte PROFINET CBA 64 • cyclic transmission Yes • cyclic transmission Yes Open IE communication 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 PROFINET Mee 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 PROFINET Mee on line break, typ. 200 ms; PROFINET MRP - Number of connections, max. 8 - Data length for connection type 01H, max. 1460 byte - Soon-TCP (RFC106) Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8 - Data length for connection type 01H, max. 22768 byte - seve	— Shared device	Yes
- Inputs, max. 1 440 byte; Per IO Controller with shared device - Outputs, max. 1 440 byte; Per IO Controller with shared device Submodules 64 - number of submodules / at the 2nd interface / as PROFINET IO device / maximum 64 - User data per submodule, max. 1 024 byte PROFINET CBA - • acyclic transmission Yes • cyclic transmission Yes • Qpen IE communication 8 • Local port numbers used at the system end 0, 20, 21, 23, 25, 80, 102, 135, 161, 443, 8080, 34962, 34963, 34964, 65532, 65335, 65535 • Keep-alive function, supported Yes PROFISIF No Redundancy mode - - Switchover time on line break, typ. 200 ms; PROFINET MRP - Number of connections, max. 8 - Data length for connection type 01H, max. 3 2768 byte - Data length for connection type 01H, max. 3 2768 byte - Switchover for open port, supported Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8 - Data length for connection type 01H, max. 3 2768 byte - Sweral passive connections, pax. 8 - Data length for connections, max. 8 - Data length for connections, pax. 8 - Data length for connec	 — Number of IO Controllers with shared device, max. 	2
Outputs, max. 1 440 byte; Per IO Controller with shared device Submodules 64 PROFINET IO device / maximum 64	Transfer memory	
Submodules	— Inputs, max.	1 440 byte; Per IO Controller with shared device
number of submodules / at the 2nd interface / as PROFINET IO device / maximum 64 User data per submodule, max. 1 024 byte PROFINET CBA	— Outputs, max.	1 440 byte; Per IO Controller with shared device
PROFINET IO device / maximum1024 byte User data per submodule, max.1024 bytePROFINET CBA	Submodules	
PROFINET CBA Yes • acyclic transmission Yes • cyclic transmission Yes Open IE communication 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 Profile communication PROFIsafe No Redundancy mode Redundancy - Switchover time on line break, typ. 200 ms; PROFINET MRP - Number of stations in the ring, max. 50 Open IE communication 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 connections per port, supported Yes • ISO-on-TCP (RFC1006) Yes - Number of connections, max. 8 - Data length, max. 32 768 byte - Data length, max. 8 - Data length, max. 32 768 byte		64
• acyclic transmission Yes • cyclic transmission Yes Open IE communication ************************************	— User data per submodule, max.	1 024 byte
• cyclic transmissionYesOpen IE communication• Number of connections, max.8• Local port numbers used at the system end0, 20, 21, 23, 25, 80, 102, 135, 161, 443, 8080, 34962, 34964, 65532, 65533, 65534, 65535• Keep-alive function, supportedYesProtocolsPROFIsafeNoRedundancy mode- Switchover time on line break, tp.200 ms; PROFINET MRP- Number of stations in the ring, max.50Open IE communication• TCP/IPYes; via integrated PROFINET interface and loadable FBs- Number of connection type 01H, max.8- Data length for connection type 11H, max.32 768 byte- several passive connections, max.8- Number of connections, max.8- Data length for connection type 01H, max.32 768 byte- Source (RFC1006)Yes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8- Data length, max.32 768 byte- Data length, max.32 768 byte- Number of connections, max.8- Data length, max.32 768 byte- Number of connections, max.8- Data length, max.32 768 byte- Number of connections, max.8- Data length, max.32 768 byte- Number of connections, max.8- Number of connections, max.8- Data length, max.32 768 byte- Number of connections, max.8- Number of connections, max.8- Number of connections, max.8<	PROFINET CBA	
Open IE communication 8 • 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 PROFIsafe No Redundancy mode 200 ms; PROFINET MRP - Switchover time on line break, typ. 200 ms; PROFINET MRP - Switchover time on line break, typ. 200 ms; PROFINET MRP - Number of stations in the ring, max. 50 Open IE communication Yes; via integrated PROFINET interface and loadable FBs - Number of connection type 01H, max. 1 460 byte - Data length for connection type 11H, max. 32 768 byte - several passive connections, per port, supported Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8 - Data length for connections per port, supported Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8 - Data length, max. 32 768 byte - Number of connections, max. 8 - Data length, max. 32 768 byte - Number of conn	acyclic transmission	Yes
• 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 Media redundancy	cyclic transmission	Yes
• 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	Open IE communication	
65533, 65534, 65535 • Keep-alive function, supported Yes Protocols No Redundancy mode Ves Media redundancy 200 ms; PROFINET MRP - Switchover time on line break, typ. 200 ms; PROFINET MRP - Number of stations in the ring, max. 50 Open IE communication Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8 - Data length for connection type 01H, max. 1460 byte - Data length for connection type 11H, max. 32 768 byte - several passive connections, max. 8 - Number of connections, max. 8 - Data length, for connections, max. 8 - ISO-on-TCP (RFC1006) Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8 - Data length, max. 32 768 byte - Data length, max. 32 768 byte - Data length, max. 8 - Data length, max. 32 768 byte <td> Number of connections, max. </td> <td>8</td>	 Number of connections, max. 	8
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 50 • 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 11H, max. 32 768 byte — several passive connections per port, supported Yes; via integrated PROFINET interface and loadable FBs • ISO-on-TCP (RFC1006) Yes; via integrated PROFINET interface and loadable FBs — Number of connections, max. 8 — Data length, max. 32 768 byte • UDP Yes; via integrated PROFINET interface and loadable FBs — Number of connections, max. 8 • UDP Yes; via integrated PROFINET interface and loadable FBs — Number of connections, max. 8 • UDP Yes; via integrated PROFINET interface and loadable FBs — Number of connections, max. 8	 Local port numbers used at the system end 	
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 50 • 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 connections per port, supported Yes • ISO-on-TCP (RFC1006) Yes; via integrated PROFINET interface and loadable FBs — Number of connections, max. 8 — Data length, for connections per port, supported Yes • ISO-on-TCP (RFC1006) Yes; via integrated PROFINET interface and loadable FBs — Number of connections, max. 8 — Data length, max. 32 768 byte • UDP Yes; via integrated PROFINET interface and loadable FBs — Number of connections, max. 8 — Data length, max. 32 768 byte — Data length, max. 32 768 byte — Number of connections, max. 8 — Data length of connections, max. 8 — Number of connections, max. 8		Yes
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 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 11H, max. 32 768 byte - several passive connections, max. 8 - Number of connections, max. 8 - Data length for connections, per port, supported Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8 - Data length, max. 2206 byte - Several passive connections, max. 8 - Data length, max. 2768 byte - Data length, max. 32 768 byte - Data length, max. 32 768 byte - UDP Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8 - Data length, max. 32 768 byte - DDP Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8 - Number of connectio		
Media redundancy200 ms; PROFINET MRP- Switchover time on line break, typ.200 ms; PROFINET MRP- Number of stations in the ring, max.50Open IE communicationYes; 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 11H, max.32 768 byte- several passive connections per port, supportedYes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8- Data length, max.32 768 byte- Several passive connections, max.8- Data length, max.32 768 byte- Data length, max.32 768 byte- Number of connections, max.8- Data length, max.32 768 byte- Number of connections, max.8- Data length, max.32 768 byte- Number of connections, max.8- Number of connections, max.8		No
Switchover time on line break, typ.200 ms; PROFINET MRP- Number of stations in the ring, max.50Open IE communication• TCP/IPYes; 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 11H, max.32 768 byte- several passive connections per port, supportedYes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8- Data length, max.32 768 byte- Several passive connections, max.8- Data length, max.32 768 byte- Data length, max.32 768 byte- Data length, max.32 768 byte- DutpYes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8- Data length, max.32 768 byte- DutpYes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8- DutpYes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8- Number of connections, max.	Redundancy mode	
- Number of stations in the ring, max.50Open IE communication• TCP/IPYes; 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 11H, max.32 768 byte- several passive connections per port, supportedYes; via integrated PROFINET interface and loadable FBs• ISO-on-TCP (RFC1006)Yes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8- Data length, max.32 768 byte- Number of connections, max.8- Data length, max.32 768 byte- Number of connections, max.8- Number of connections, max.8- Number of connections, max.8- Number of connections, max.32 768 byte- Number of connections, max.8- Number of connections, max.8	-	
Open IE communication TCP/IP Yes; via integrated PROFINET interface and loadable FBs Number of connections, max. Data length for connection type 01H, max. 1 460 byte Data length for connection type 11H, max. 2 768 byte several passive connections per port, supported Yes; via integrated PROFINET interface and loadable FBs ISO-on-TCP (RFC1006) Yes; via integrated PROFINET interface and loadable FBs Number of connections, max. Data length, max. UDP Yes; via integrated PROFINET interface and loadable FBs Yes; via integrated PROFINET interface and loadable FBs 8 Data length, max. 8 Several passive connections, max. 8 Number of connections, max. 8 Number of connections, max. 8 		
• TCP/IPYes; 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 11H, max.32 768 byte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8- Data length, max.32 768 byte• UDPYes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8- Number of connections, max.32 768 byte• UDPYes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8• UDPYes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8		50
- Number of connections, max. 8 - Data length for connection type 01H, max. 1 460 byte - Data length for connection type 11H, max. 32 768 byte - several passive connections per port, supported Yes • ISO-on-TCP (RFC1006) Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8 - Data length, max. 32 768 byte - Number of connections, max. 8 - Data length, max. 32 768 byte - Number of connections, max. 8 - Data length, max. 32 768 byte - Number of connections, max. 8 - Number of connections, max. 8 - Number of connections, max. 8	· ·	
- Data length for connection type 01H, max.1 460 byte- Data length for connection type 11H, max.32 768 byte- several passive connections per port, supportedYes• ISO-on-TCP (RFC1006)Yes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8- Data length, max.32 768 byte• UDPYes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8• UDPYes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8• UDPYes; via integrated PROFINET interface and loadable FBs- Number of connections, max.8		-
— Data length for connection type 11H, max. 32 768 byte — several passive connections per port, supported Yes • ISO-on-TCP (RFC1006) Yes; via integrated PROFINET interface and loadable FBs — Number of connections, max. 8 — Data length, max. 32 768 byte • UDP Yes; via integrated PROFINET interface and loadable FBs — Number of connections, max. 8 • UDP Yes; via integrated PROFINET interface and loadable FBs • Number of connections, max. 8		
- several passive connections per port, supported Yes • ISO-on-TCP (RFC1006) Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8 - Data length, max. 32 768 byte • UDP Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8 • UDP Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8		
ISO-on-TCP (RFC1006) Yes; via integrated PROFINET interface and loadable FBs Number of connections, max. Data length, max. UDP Yes; via integrated PROFINET interface and loadable FBs Number of connections, max. 8		
- Number of connections, max. 8 - Data length, max. 32 768 byte • UDP Yes; via integrated PROFINET interface and loadable FBs - Number of connections, max. 8		Yes
— Data length, max. 32 768 byte • UDP Yes; via integrated PROFINET interface and loadable FBs — Number of connections, max. 8		-
UDP Yes; via integrated PROFINET interface and loadable FBs Number of connections, max.	 Number of connections, max. 	8
- Number of connections, max. 8	— Data length, max.	32 768 byte
	• UDP	Yes; via integrated PROFINET interface and loadable FBs
— Data length, max. 1 472 byte	 Number of connections, max. 	8
	— Data length, max.	1 472 byte

Web server	
• supported	Yes
User-defined websites	Yes
Number of HTTP clients	5
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	22.05%
communication function / S7 basic communication	Yes
User data per job, max.	76 byte
 User data per job, max. 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	nication load) / header
 Setpoint for the CPU communication load 	50 %
 Number of remote interconnection partners 	32
 Number of functions, master/slave 	30
 Total of all master/slave connections 	1 000
 Data length of all incoming connections master/slave, max. 	4 000 byte
 Data length of all outgoing connections master/slave, 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. 	1 400 byte
performance data / PROFINET CBA / remote interconnection /	
— Sampling interval, min.	500 ms
 Number of incoming interconnections 	100
 — Number of outgoing interconnections 	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 remote connections to input variables / with PROFINET CBA / with cyclic transfer / maximum 	200
 number of remote connections to output variables / with cyclical transfer / with PROFINET CBA / maximum 	200
 data volume / as user data for remote interconnections with input variables / with cyclical transfer / with PROFINET CBA / maximum 	2 000 byte
 — data volume / as user data for remote interconnections with output variables / with cyclical transfer / with PROFINET CBA / maximum 	2 000 byte
— data volume / as user data for remote	450 byte

interconnections / with cyclical transfer / with PROFINET CBA / per connection / maximum	
performance data / PROFINET CBA / HMI variables via PROF	FINET / 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 funct	ionality / header
— 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. 14; X2 as PROFINET: 24 max.
S7 message functions	
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	Yes 4
Number of breakpoints Status/control	
Status/control	4
Status/control • Status/control variable	4 Yes
Status/control • Status/control variable • Variables	4 Yes Inputs, outputs, memory bits, DB, times, counters
Status/control • Status/control variable • Variables • Number of variables, max.	4 Yes Inputs, outputs, memory bits, DB, times, counters 30
Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max.	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30
Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max.	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30
Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max. Forcing	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 14
Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max. Forcing • Forcing	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 14 Yes
Status/control • Status/control variable • Variables • Number of variables, max. — of which status variables, max. — of which control variables, max. Forcing • Forcing • Forcing, variables	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 14 Yes Inputs, outputs
Status/control Status/control variable Variables Number of variables, max. — of which status variables, max. — of which control variables, max. Forcing Forcing Forcing, variables Number of variables, max.	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 14 Yes Inputs, outputs
Status/control • Status/control variable • Variables • Number of variables, max. of which status variables, max. of which control variables, max. Forcing • Forcing • Forcing, variables • Number of variables, max. Diagnostic buffer	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 14 Yes Inputs, outputs 10
Status/control Status/control variable Variables Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing Forcing, variables Number of variables, max. Diagnostic buffer present	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 14 Yes Inputs, outputs 10 Yes
Status/control Status/control variable Variables Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max.	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 14 Yes Inputs, outputs 10 Yes 500
Status/control Status/control variable Variables Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. adjustable	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 14 Yes Inputs, outputs 10 Yes 500 No
Status/control Status/control variable Variables Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing Forcing, variables Number of variables, max. Diagnostic buffer present Number of entries, max. adjustable	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 14 Yes Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained
Status/control Status/control variable Variables Number of variables, max. of which status variables, max. of which control variables, max. Forcing Forcing 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.	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 14 Yes Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499
Status/control • Status/control variable • Variables • Number of variables, max. - of which status variables, max. - of which control variables, max. • Forcing • 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	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 14 Yes Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499 Yes; From 10 to 499
Status/control Status/control variable Variables Number of variables, max	4 Yes Inputs, outputs, memory bits, DB, times, counters 30 30 14 Yes Inputs, outputs 10 Yes 500 No 100; Only the last 100 entries are retained 499 Yes; From 10 to 499

Ambient conditions	
Ambient temperature during operation	
● min.	0°C
• max.	60 °C
configuration / header	
Configuration software	
• STEP 7	Yes; V5.5 or higher
configuration / programming / header	
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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