Data sheet

6ES7317-2EK14-0AB0



SIMATIC S7-300 CPU 317-2 PN/DP, Central processing unit with 1 MB work memory, 1st interface MPI/DP 12 Mbit/s, 2nd interface Ethernet PROFINET, with 2-port switch, Micro Memory Card required

General information	
Product type designation	CPU 317-2 PN/DP
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	1 024 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.	0.025 μs
for word operations, typ.	0.03 μs
for fixed point arithmetic, typ.	0.04 μs
for floating point arithmetic, typ.	0.16 µs

PU-blocks	0.040 (DD - FO - FD) ::
lumber of blocks (total)	2 048; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB .	
 Number, max. 	2 048; Number range: 1 to 16000
• Size, max.	64 kbyte
-B	
Number, max.	2 048; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
Number, max.	2 048; 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 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously) $$
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
ounters, timers and their retentivity	
37 counter	
Number	512
Retentivity	
— adjustable	Yes
— preset	Z 0 to Z 7
Counting range	
— adjustable	Yes
— lower limit	0
— upper limit	999
EC counter	
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
S7 times	
Number	512
Retentivity	
— adjustable	Yes
— preset	No retentivity
Time range	
— lower limit	10 ms
— upper limit	9 990 s
EC timer	
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
ta areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	256 kbyte
Flag	
• Size, max.	4 096 byte
Retentivity available	Yes; From MB 0 to MB 4 095
- Notonitivity available	
Retentivity preset	MB 0 to MB 15

Data blocks	
Retentivity adjustable	Yes; via non-retain property on DB
Retentivity preset	Yes
Local data	103
per priority class, max.	32 768 byte; Max. 2048 bytes per block
Address area	oz roo byte, max. zono bytes per blook
I/O address area	
• Inputs	8 192 byte
Outputs	8 192 byte
of which distributed	0 192 byte
— Inputs	8 192 byte
— Outputs	8 192 byte
Process image	6 192 byte
• Inputs	8 192 byte
•	8 192 byte
Outputs Inputs, adjustable	8 192 byte
	•
Outputs, adjustableInputs, default	8 192 byte 256 byte
Outputs, default Subprocess images	256 byte
· · ·	1: With DDOFINET IO, the length of the uper data is limited to 1600 butes
Number of subprocess images, max. Digital channels	1; With PROFINET IO, the length of the user data is limited to 1600 bytes
	65 526
Inputs — of which central	65 536 1 024
	65 536
Outputs — of which central	1 024
	1 024
Analog channels	4 096
• Inputs	256
— of which central	4 096
Outputs — of which central	256
Hardware configuration	200
	2
Number of expansion units, max.	3
Number of DP masters	4
• integrated	1
via CP Number of operable FMs and CPs (recommended)	4
Number of operable rivis and CES (recommended)	
	0
• FM	8
► FM◆ CP, PtP	8
FMCP, PtPCP, LAN	
● FM ● CP, PtP ● CP, LAN Rack	8 10
● FM ● CP, PtP ● CP, LAN Rack ● Racks, max.	8 10 4
 FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. 	8 10
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Time of day	8 10 4
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Time of day Clock	8 10 4 8
FM CP, PtP CP, LAN Rack Rack Racks, max. Modules per rack, max. Time of day Clock Hardware clock (real-time)	8 10 4 8 Yes
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Modules per rack, max. Time of day Clock Hardware clock (real-time) retentive and synchronizable	8 10 4 8 Yes Yes
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Modules per rack, max. Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time	8 10 4 8 Yes Yes Yes Yes 6 wk; At 40 °C ambient temperature
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Modules per rack, max. Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max.	8 10 4 8 Yes Yes Yes 6 wk; At 40 °C ambient temperature 10 s; Typ.: 2 s
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Modules per rack, max. Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON	8 10 4 8 Yes Yes 6 wk; At 40 °C ambient temperature 10 s; Typ.: 2 s Clock continues running after POWER OFF
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Modules per rack, max. Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period	8 10 4 8 Yes Yes Yes 6 wk; At 40 °C ambient temperature 10 s; Typ.: 2 s
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Modules per rack, max. Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period Operating hours counter	8 10 4 8 Yes Yes Yes 6 wk; At 40 °C ambient temperature 10 s; Typ.: 2 s Clock continues running after POWER OFF the clock continues at the time of day it had when power was switched off
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Modules per rack, max. Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period Operating hours counter Number	8 10 4 8 Yes Yes Yes 6 wk; At 40 °C ambient temperature 10 s; Typ.: 2 s Clock continues running after POWER OFF the clock continues at the time of day it had when power was switched off 4
FM CP, PtP CP, LAN Rack Rack, max. Modules per rack, max. Modules per rack, max. Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period Operating hours counter Number Number/Number range	8 10 4 8 Yes Yes 6 wk; At 40 °C ambient temperature 10 s; Typ.: 2 s Clock continues running after POWER OFF the clock continues at the time of day it had when power was switched off 4 0 to 3
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Modules per rack, max. Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period Operating hours counter Number Number/Number range Range of values	8 10 4 8 Yes Yes 6 wk; At 40 °C ambient temperature 10 s; Typ.: 2 s Clock continues running after POWER OFF the clock continues at the time of day it had when power was switched off 4 0 to 3 0 to 2^31 hours (when using SFC 101)
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Modules per rack, max. Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period Operating hours counter Number Number Range of values Granularity	Yes Yes 6 wk; At 40 °C ambient temperature 10 s; Typ.: 2 s Clock continues running after POWER OFF the clock continues at the time of day it had when power was switched off 4 0 to 3 0 to 2^31 hours (when using SFC 101) 1 h
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Modules per rack, max. Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period Operating hours counter Number Number Range of values Granularity retentive	8 10 4 8 Yes Yes 6 wk; At 40 °C ambient temperature 10 s; Typ.: 2 s Clock continues running after POWER OFF the clock continues at the time of day it had when power was switched off 4 0 to 3 0 to 2^31 hours (when using SFC 101)
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period Operating hours counter Number Number Range of values Granularity retentive Clock synchronization	Yes Yes 6 wk; At 40 °C ambient temperature 10 s; Typ.: 2 s Clock continues running after POWER OFF the clock continues at the time of day it had when power was switched off 4 0 to 3 0 to 2^31 hours (when using SFC 101) 1 h Yes; Must be restarted at each restart
FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Modules per rack, max. Time of day Clock Hardware clock (real-time) retentive and synchronizable Backup time Deviation per day, max. Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup period Operating hours counter Number Number Range of values Granularity retentive	Yes Yes 6 wk; At 40 °C ambient temperature 10 s; Typ.: 2 s Clock continues running after POWER OFF the clock continues at the time of day it had when power was switched off 4 0 to 3 0 to 2^31 hours (when using SFC 101) 1 h

	V
• on MPI, device	Yes
• to DP, master	Yes; With DP slave only slave clock
• 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
Interfaces	
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 device	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	
Transmission rate, max.	12 Mbit/s
max. number of DP devices	124
Services	
— PG/OP communication	Yes
— Routing	Yes
Global data communication	No
S7 basic communication	Yes; I blocks only
— S7 communication	Yes
— S7 communication — S7 communication, as client	No
— S7 communication, as server	Yes
— Equidistance	Yes
Leginistance Isochronous mode	Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS
iosomonous mode	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.	8 kbyte
— Outputs, max.	8 kbyte

Interface type Isolated Isolated Isolated Isolated Autonegotiation Yes Autonegotiation Autonegotiation Autonegotiation Autonegotiation Autonegotiation Autonegotiation Autonegotiation Autonegotiation Autonegotiation Yes Interface types		
	User data per DP device	
### Transmission rate, max. ### automatic baud rate search ###	— Inputs, max.	244 byte
Transmission rate, max	— Outputs, max.	244 byte
automatic bauf rate search Address area, max. Address area, max. Services PROJOP communication Routing Clicibed data communication So St basic co	1st interface / PROFIBUS DP device / header	
Address area, max. User data per address area, max. Services PROOP communication Routing Clobal data communication ST books communication ST conformation on No ST communication, as client No PROFINET Institute Institute St communication Yes Institute Yes No PROFINET ID Controller PRO	 Transmission rate, max. 	12 Mbit/s
Services Services - PGOP communication Routing Global data communication No S7 basic communication No S7 basic communication No S7 basic communication No S7 basic communication No S7 communication, as client No S8 communication, as client No S8 communication, as client No S9 communication No No S9 communication No S	 automatic baud rate search 	Yes; only with passive interface
Sentices - PGIOP communication - Routing - Global data communication - ST basic communication - ST basic communication - ST communication - ST communication, as client - ST communication, as server - ST communication, as server - Direct data exchange (slave-to-slave communication) - ST communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - Inputs - DPV1 - Inputs - Uniterface byte - Outputs - Uniterface byte - Outputs - Ves -	 Address area, max. 	32
PGIOP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication S7 communication S8 communication, as client S8 communication, as client S9 communication, as server S9 communication, as server S9 communication, as server S9 communication, as server S9 communication	 User data per address area, max. 	32 byte
- Routing - Global data communication No No - S7 basic communication No - S7 basic communication No - S7 basic communication S7 communication, as client No - S7 communication, as client No - S7 communication, as client No - S7 communication, as server Yes; Connection configured on one side only - Communication, as server Personal Poly No - DPV1	Services	
Global data communication	— PG/OP communication	Yes
- S7 basic communication - S7 communication, as client - S7 communication, as client - No - S7 communication, as client - No - S7 communication, as server - Direct data exchange (slave-b-slave communication) - DPV1 No - No - Transfer memory - Inputs - 244 byte - 244 byte - 244 byte - 245 b	— Routing	Yes; Only with active interface
— \$7 communication Yes	 Global data communication 	No
- S7 communication, as client - S7 communication, as server - Direct date exchange (slave-to-slave communication) - DPV1 - No Transfer memory - Inputs - Outputs - Ou	 S7 basic communication 	No
- S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 No - DPV1 No - Transfer memory - Inputs 244 byte - Outputs 244 byte - Outputs - Inputs - Outputs - Ves - Interface byee - PROFINET - Isolated - Autonegotiation Yes - Autonatic detection of transmission rate - Autonatic detection of transmission rate - Routputs - Ves - Autonatic detection of transmission rate - Routputs - Ves - Autonatic detection of transmission rate - Routputs - Ves - Autonatic detection of transmission rate - Routputs - Ves - Autonatic detection of transmission rate - Routputs - Ves - Autonatic detection of transmission rate - Routputs - Ves - Routputs - Ves - Routputs - Routpu	— S7 communication	Yes
— Direct data exchange (slave-to-slave communication) — DPV1 No Transfer memory — Inputs 244 byte 244 byte 242	 — S7 communication, as client 	No
communication) - DPV1 No Transfer memory - Inputs 244 byte - Outputs 244 byte - Outputs 244 byte - Outputs 244 byte - Outputs 244 byte - Unitarizec Interface byce Interface byce Isolated Yes - Autonegotation Yes - Autonegotation Yes - Autonegotation Yes - Autonegotation Yes - Reference of transmission rate Yes - Media redundancy Y	 S7 communication, as server 	Yes; Connection configured on one side only
Transfer memory	 Direct data exchange (slave-to-slave 	Yes
Transfer memory Inputs Outputs 244 byte Outputs 244 byte 240 byte 241 byte 241 byte 241 byte 241 byte 241 byte 241 byte 242 byte 242 byte 242 byte 242 byte 244 byte 245 byte 25 looks and 25 looks a	communication)	
- Inputs	— DPV1	No
Dutylus 2. Interface PROFINET Isolated Yes	Transfer memory	
Interface type	•	244 byte
Interface type Isolated Isolated Isolated Isolated Autonegotiation Yes Autonegotiation Autonegotiation Autonegotiation Autonegotiation Autonegotiation Autonegotiation Autonegotiation Autonegotiation Autonegotiation Yes Interface types	— Outputs	244 byte
Isolated 4 Yes automatic detection of transmission rate 4 Yes; 10/100 Mbit/s Autocrossing 7 Yes Autocrossing 7 Yes Change of IP address at runtime, supported 7 Yes Interface types 8 R. R. L. S. (Ethernet) 7 Yes Number of ports 2 2 Integrated switch 7 Yes, Also simultaneously with IO-Device functionality 7 Yes, Also simultaneously with IO-Device functionality 7 Yes, Also simultaneously with IO-Device functionality 8 Yes PROFINET IO Controller 7 Yes, Also simultaneously with IO-Device functionality 8 Yes PROFINET BA 7 Yes PROFINET BA 7 Yes PROFIBUS DP master 8 No PROFIBUS DP master 8 No PROFIBUS DP device 9 No Open IE communication 9 Yes; Via TCP/IP, ISO on TCP, and UDP Web server 9 Yes Media redundancy 9 Yes PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services 9 PROFINET IO Controller 9 PROFINET IO Controller 9 **Services 1 Yes PROFINET OF TO TROLLER 1 Yes A Media redundancy 9 Yes **PROFINET OF TO TROLLER 1 Yes **Services 1 Yes PROFINET OF TO TROLLER 1 Yes PROFINET IO TROLLER 1 Yes Number of IO devices with prioritized startup, max. 128 Of which in line, max. 128 Of which in line, max. 128 Number of IO Devices with IRT and the option "high flexibility" 128	2. Interface	
automatic detection of transmission rate Autoregolation Autoregola	Interface type	PROFINET
Autonegotiation Yes Autorossing Yes Change of IP address at runtime, supported Yes Interface types • RJ 45 (Ethernet) Yes • Number of ports 2 • Integrated switch Yes • PROFINET IO Controller Yes; Also simultaneously with IO-Device functionality Yes • PROFINET IO BAY Yes • PROFIBUS DP master No PROFIBUS DP device No • PROFIBUS DP device No • Mel Yes; Also simultaneously with IO Controller functionality Yes • PROFIBUS DP master No • PROFIBUS DP master No • PROFIBUS DP master No • PROFIBUS DP device No • Open IE communication Yes; Via TCP/IP, ISO on TCP, and UDP • Web server Yes • Media redundancy Yes • Media redundancy Yes PROFINET IO Controller • Transmission rate, max. 100 Mbit/s Services - PG/OP communication Yes: with loadable FBs, max. configurable connections: 16, max. number of instances: 32 - Isochronous mode Yes, OB 61; isochronous mode can only be used alternatively on PROFIBUS DP OP 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 In line, max. 44 - Of which In line, max Of which In line, max Number of IO Devices with IRT and the option "high flexibility" 128	Isolated	Yes
Autocrossing Yes Change of IP address at runtime, supported Yes Interface types R. I. 45 (Ethernet) Yes Integrated switch Yes MPI PROFINET IO Controller Yes; Also simultaneously with IO-Device functionality PROFINET IO Device Yes; Also simultaneously with IO Controller functionality PROFINET IO Device Yes; Also simultaneously with IO Controller functionality PROFINET BAA Yes PROFIBUS DP master PROFIBUS DP device No PROFIBUS DP device No Open IE communication Yes; Via TCP/IP, ISO on TCP, and UDP Web server Media redundancy Yes PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services PG/OP communication Yes FROFIDE IO Controller Services PG/OP communication Yes Tes Sommunication Yes PROFINET IO Controller IT IN Yes Services PG/OP Communication Yes PROFINET IO Controller Yes Sommunication Yes PROFINET IO Yes Sommunication Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32 In IRT Shared device Yes Prioritized startup Number of IO devices with prioritized startup, max. 22 Number of connectable IO Devices, max. 128 Of which In line, max. 44 PNumber of IO Devices with IRT, max. 64 Number of IO Devices with IRT and the option "high flexibility"	automatic detection of transmission rate	Yes; 10/100 Mbit/s
Change of IP address at runtime, supported Interface types • RJ 45 (Elhemet) • Number of ports • integrated switch Protocols • MPI • PROFINET IO Controller • PROFINET IO Device • PROFIBUS DP master • PROFIBUS DP device • Open IE communication • Media redundancy • PROFINET IO Controller • PROFINET IO Controller • PROFINET OCONTOLICE • PROFINET OCONTOLICE • PROFINET OCONTOLICE • PROFIBUS DP master • PROFIBUS DP device • No • Open IE communication • Yes; Via TCP/IP, ISO on TCP, and UDP • Web server • Media redundancy • Yes • Media redundancy • Yes • PROFINET IO Controller • Transmission rate, max. Services - PG/OP communication • Yes - PG/OP communication • Yes - PROUTINET IO Controller • Transmission rate max. Services - PG/OP communication • Yes - PROFIDED OP OP PROFINET IO - Shared device • Yes; With loadable FBs, max. configurable connections: 16, max. number of instances: 32	Autonegotiation	Yes
Interface types RJ 45 (Ethernet) Number of ports Number of ports Number of ports Nest integrated switch PROFINET IO Controller PROFINET IO Device PROFINET IO Device PROFINET CBA PROFIBUS DP master PROFIBUS DP master No PROFIBUS DP device Nest integrated switch PROFIBUS DP device PROFIBUS DP device No PROFIBUS DP device No PROFIBUS DP device No PROFIBUS DP device PROFIBUS DP device No PROFIDET IO Controller **Yes **Web server** **Yes **Media redundancy *	Autocrossing	Yes
RV 45 (Ethernet) Number of ports Integrated switch 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 PROFINET IO Controller Transmission rate, max. PROFINET IO Controller PROFINET IO Controller PROFINET OS A PROFINET Web server Media redundancy Pres Media redundancy PROFINET IO Controller PROFINET IO Contr	Change of IP address at runtime, supported	Yes
integrated switch Protocols MPI PROFINET IO Controller PROFINET IO Device PROFINET IO Device PROFIBUS DP master PROFIBUS DP device Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. PROFINET IO Controller PROFINET IO Controller Transmission rate, max. PROFINET IO Services PROFIDUS PROFINET IO Red Transmission rate, max. PROFINET IO Controller I Transmission rate, max. PROFINET IO Controller PROFINET IO Controller I Transmission rate, max. PROFINET IO Controller PROFINET IO Controller I Transmission rate, max. PROFINET IO Controller PROFINE	Interface types	
e integrated switch 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 device No PROFIBUS DP device 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; with loadable FBs, max. configurable connections: 16, max. number of instances: 32 — Isochronous mode Yes; With loadable FBs, max. configurable connections: 16, max. number of instances: 32 — Isochronous mode Yes; Os 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO Por PROFINET IO Prioritized startup Yes — Prioritized startup Yes — Number of IO devices with prioritized startup, 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 fexibility" 128	RJ 45 (Ethernet)	Yes
Protocols MPI PROFINET IO Controller PROFINET GBA PROFIBUS DP master PROFIBUS DP device Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. PROFIONE PROFOP communication PROFIDUS PROFIDUS PROFIDUS PROFIDUS PROFIDUS PROFIDUS PROFIDUS PROFIDUS PROFIDUS PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services PROFINET PG/OP communication Yes PROFINET PG/OP communication PG/OP communication Yes PROFINET PG/OP communication PG/OP commun	Number of ports	2
Protocols MPI PROFINET IO Controller PROFINET GBA PROFIBUS DP master PROFIBUS DP device Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. PROFIONE PROFOP communication PROFIDUS PROFIDUS PROFIDUS PROFIDUS PROFIDUS PROFIDUS PROFIDUS PROFIDUS PROFIDUS PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services PROFINET PG/OP communication Yes PROFINET PG/OP communication PG/OP communication Yes PROFINET PG/OP communication PG/OP commun	integrated switch	Yes
PROFINET IO Controller PROFINET CBA PROFIBUS DP master PROFIBUS DP master PROFIBUS DP device PROFINET IO Controller PROFINET IO Controller PROFINET IO Controller PROFINET IO Controller PROFINE DE COMMUNICATION PROFIDE D		
PROFINET IO Device PROFIBUS DP master PROFIBUS DP master PROFIBUS DP device Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Services PROFOP communication Yes PROFINET IO Controller PG/OP communication Yes Yes PROFINET IO Controller PG/OP communication Yes Yes PROFINET IO Yes PROFINET IO Yes Profinitized startup Yes Number of IO devices with prioritized startup, max. Profinitized startup Number of IO devices with IRT, max. Of which Io devices with IRT, max. Of which In line, max. Number of IO Devices with IRT and the option "high flexibility" Pass Also simultaneously with IR Occurrence in the control of the con	• MPI	No
PROFINET IO Device PROFIBUS DP master PROFIBUS DP master PROFIBUS DP device Open IE communication Web server Media redundancy PROFINET IO Controller Transmission rate, max. Services PROFOP communication Yes PROFINET IO Controller PG/OP communication Yes Yes PROFINET IO Controller PG/OP communication Yes Yes PROFINET IO Yes PROFINET IO Yes Profinitized startup Yes Number of IO devices with prioritized startup, max. Profinitized startup Number of IO devices with IRT, max. Of which Io devices with IRT, max. Of which In line, max. Number of IO Devices with IRT and the option "high flexibility" Pass Also simultaneously with IR Occurrence in the control of the con	PROFINET IO Controller	Yes; Also simultaneously with IO-Device functionality
PROFIBUS DP master PROFIBUS DP device PROFIBUS DP device No Open IE communication Yes; Via TCP/IP, ISO on TCP, and UDP Web server Media redundancy Yes PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services PG/OP communication Yes Routing Sr communication Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32 Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO Yes Prioritized startup Number of IO devices with prioritized startup, max. Number of connectable IO Devices, max. Of which In line, max. Number of IO Devices with IRT, max. Hard and the option "high flexibility" 128		
PROFIBUS DP master PROFIBUS DP device No Open IE communication Yes; Via TCP/IP, ISO on TCP, and UDP Web server Media redundancy Yes Transmission rate, max. 100 Mbit/s Services PG/OP communication Yes Routing Servicus PG/OP communication Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32 Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO Prioritized startup Number of IO devices with prioritized startup, max. Number of connectable IO Devices, max. Of which IO devices with IRT, max. Of which Io line, max. Number of IO Devices with IRT and the option "high flexibility" 128		
 PROFIBUS DP device Open IE communication Yes; Via TCP/IP, ISO on TCP, and UDP Web server Media redundancy Yes Media redundancy Transmission rate, max. 100 Mbit/s Services — PG/OP communication — Routing — S7 communication — Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32 — Isochronous mode — IRT — Shared device — Prioritized startup — Number of IO devices with prioritized startup, max. — Number of connectable IO Devices, max. — Of which In line, max. — Number of IO Devices with IRT, max. — Number of IO Devices with IRT and the option "high flexibility" 		
Open IE communication ∀es; Via TCP/IP, ISO on TCP, and UDP ∀es Media redundancy Yes PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services — PG/OP communication — Routing — S7 communication — S7 communication — IRT — IRT — Shared device — Prioritized startup — Number of IO devices with IRT, max. — Of which IO devices with IRT and the option "high flexibility" 128 — Number of IO Devices with IRT and the option "high flexibility" 100 Mbit/s 100 Mbit/s 100 Mbit/s 300 Mbit/s 3		
Web server Media redundancy PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services PG/OP communication Routing Sommunication Yes, with loadable FBs, max. configurable connections: 16, max. number of instances: 32 Isochronous mode Pischronous mode Prioritized startup Number of IO devices with prioritized startup, max. Of which IO devices with IRT and the option "high flexibility" Nes 100 Mbit/s 100 Mbit/s Yes Yes Yes Yes, with loadable FBs, max. configurable connections: 16, max. number of instances: 32 Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO Yes Yes Yes Number of IO devices with prioritized startup, max. 64 Number of IO Devices with IRT and the option "high flexibility"		
Media redundancy PROFINET IO Controller Transmission rate, max. 100 Mbit/s Services — PG/OP communication — Routing — S7 communication — Isochronous mode — IRT — Shared device — Prioritized startup — Number of IO devices with IRT, max. — Of which In line, max. — Number of IO Devices with IRT and the option "high flexibility" **Media redundancy Yes 100 Mbit/s 110 Mbit/s 128 110 Mbit/s 128 128 128 128	•	
PROFINET IO Controller		
● Transmission rate, max. Services	·	, 00
Services - PG/OP communication Yes - Routing Yes - S7 communication Yes; with loadable FBs, max. configurable connections: 16, 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 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" - Yes - Number of IO Devices with IRT and the option "high flexibility"		100 Mhit/s
- PG/OP communication - Routing - S7 communication - S7 communication - S7 communication - Isochronous mode - Isochronous mode - Isochronous mode - IRT - Shared device - Prioritized startup - Number of IO devices with prioritized startup, max Number of connectable IO Devices, max Of which IO devices with IRT, max Number of IO Devices with IRT and the option "high flexibility" - Yes - Number of IO Devices with IRT and the option "high flexibility" - Yes - Number of IO Devices with IRT and the option "high flexibility" - Yes - Number of IO Devices with IRT and the option "high flexibility" - Yes - Number of IO Devices with IRT and the option "high flexibility" - Yes - Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32 - Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO Yes - Yes - Yes - Yes - Yes - Number of IO devices with prioritized startup, max 64 - 64 - 128		TOO INDICO
- Routing - S7 communication Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32 - Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO Yes - Shared device - Prioritized startup - 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" 128		Von
- S7 communication Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32 - Isochronous mode Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO Yes Shared device Prioritized startup 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" 128		
instances: 32 Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO IRT Yes Shared device Prioritized startup 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" instances: 32 Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO Yes 128 44 45 46 44 46 46 46 46 47 48 48 49 40 40 40 40 40 40 40 40 40	•	
DP or PROFINET IO Yes Shared device Prioritized startup 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" DP or PROFINET IO Yes 128 44 44 44 44 45 46 46 46 46 46		instances: 32
 — Shared device — Prioritized startup — 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" 128 		DP or PROFINET IO
 — Prioritized startup — 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" Yes 32 — 64 — 64 — 128 — 128		
 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" 		
 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" 128 128 	·	
 Of which IO devices with IRT, max. of which in line, max. Number of IO Devices with IRT and the option "high flexibility" 128 	 Number of IO devices with prioritized startup, max. 	32
 — of which in line, max. — Number of IO Devices with IRT and the option "high flexibility" 64 128 	 Number of connectable IO Devices, max. 	128
— Number of IO Devices with IRT and the option "high flexibility"	 Of which IO devices with IRT, max. 	64
flexibility"	— of which in line, max.	64
— of which in line, max.	flexibility"	128
	— of which in line, max.	61

 Number of connectable IO Devices for RT, max. 	128
— of which in line, 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	on the different party for more detailed
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
User data consistency, max.	1 024 byte
PROFINET IO Device	. 02 : 2,10
Services	
— PG/OP communication	Yes
— Routing	Yes
— S7 communication	Yes; with loadable FBs, max. configurable connections: 16, 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.	16
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.	16
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.	16
— Data length, max.	32 768 byte
• UDP	Yes; via integrated PROFINET interface and loadable FBs
Number of connections, max.	16
— Data length, max.	1 472 byte
— Data leligili, max. Web server	2 sylo
	Yes
supported	160

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	
• 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
S7 communication	as server)
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	unication load) / header
 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.	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 length per connection, max.	1 400 byte
performance data / PROFINET CBA / remote interconnection /	· · · ·
Transmission frequency: Transmission interval, min.	10 ms
Number of incoming interconnections	200
Number of outgoing interconnections	200 Pute
Data length of all incoming interconnections, max. Pote length of all outgoing interconnections, max.	2 000 byte
Data length of all outgoing interconnections, max. Pata length per connection, max.	2 000 byte
— Data length per connection, max.	450 byte
performance data / PROFINET CBA / HMI variables via PROF — 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 PROFIRIS devices	16
Number of linked PROFIBUS devices Pote length per connection, may	16
Data length per connection, max. Number of connections	240 byte; Slave-dependent
overall	22
usable for PG communication	32
	31
— reserved for PG communication	1
— adjustable for PG communication, min.	1
— adjustable for PG communication, max.	31
usable for OP communication	31
— reserved for OP communication	1
— adjustable for OP communication, min.	1
adjustable for OP communication, max.	31
usable for S7 basic communication	30
 reserved for S7 basic communication 	0
 adjustable for S7 basic communication, min. 	0
 adjustable for S7 basic communication, max. 	30
 usable for S7 communication 	16
 reserved for S7 communication 	0
 adjustable for S7 communication, min. 	0
 adjustable for S7 communication, max. 	16
 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.
A 4 (I	14; X2 as PROFINET: 24 max.
S7 message functions	
Number of login stations for message functions, max.	32; 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
Forcing, variables	Inputs, outputs
Number of variables, max.	10
Diagnostic buffer	
• present	Yes
Number of entries, max.	500
— adjustable	No
adjustable of which powerfail-proof	100; Only the last 100 entries are retained
Number of entries readable in RUN, max.	499
— adjustable	Yes; From 10 to 499
— preset	10
Service data	Voo
• can be read out	Yes
Ambient conditions	
Ambient temperature during operation	0.00
• 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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