## SIEMENS

## Data sheet

## 6ES7318-3EL01-0AB0



SIMATIC S7-300 CPU 319-3 PN/DP, Central processing unit with 2 MB work memory, 1st interface MPI/DP 12 Mbit/s, 2nd interface DP master/slave 3rd interface Ethernet PROFINET, with 2-port switch, Micro Memory Card required

General information	
Firmware version	V3.2
Product function	
Isochronous mode	Yes; Via 2nd PROFIBUS DP or PROFINET interface
Engineering with	
<ul> <li>Programming package</li> </ul>	STEP 7 V5.5 or higher
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
external protection for power supply lines (recommendation)	2 A min.
Mains buffering	
<ul> <li>Mains/voltage failure stored energy time</li> </ul>	5 ms
Repeat rate, min.	1 s
Input current	
Current consumption (rated value)	1 250 mA
Current consumption (in no-load operation), typ.	500 mA
Inrush current, typ.	4 A
<sup>2</sup> t	1.2 A <sup>2.</sup> s
Power loss	
Power loss, typ.	14 W
Memory	
Work memory	
<ul> <li>integrated</li> </ul>	2 048 kbyte
expandable	No
Load memory	
• Plug-in (MMC)	Yes
<ul> <li>Plug-in (MMC), max.</li> </ul>	8 Mbyte
<ul> <li>Data management on MMC (after last programming), min.</li> </ul>	10 y
Backup	
• present	Yes
<ul> <li>without battery</li> </ul>	Yes
CPU processing times	
for bit operations, typ.	0.004 µs
for word operations, typ.	0.01 µs
for fixed point arithmetic, typ.	0.01 µs

for floating point arithmetic, typ.	0.04 µs
CPU-blocks	
Number of blocks (total)	4 096; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
● Number, max.	4 096; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
<ul> <li>Number, max.</li> </ul>	4 096; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
• Number, max.	4 096; Number range: 0 to 7999
• Size, max.	64 kbyte
OB	
• Size, max.	64 kbyte
<ul> <li>Number of free cycle OBs</li> </ul>	1; OB 1
<ul> <li>Number of time alarm OBs</li> </ul>	1; OB 10
<ul> <li>Number of delay alarm OBs</li> </ul>	2; OB 20, 21
<ul> <li>Number of cyclic interrupt OBs</li> </ul>	4; OB 32, 33, 34, 35 (OB 35: smallest settable clock pulse = 500 $\mu s)$
<ul> <li>Number of process alarm OBs</li> </ul>	1; OB 40
<ul> <li>Number of DPV1 alarm OBs</li> </ul>	3; OB 55, 56, 57
<ul> <li>Number of isochronous mode OBs</li> </ul>	1; OB 61
<ul> <li>Number of startup OBs</li> </ul>	1; OB 100
<ul> <li>Number of asynchronous error OBs</li> </ul>	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	0.040
Number	2 048
Retentivity — adjustable	Yes
— lower limit	0
— upper limit	2 047
— preset	Z 0 to Z 7
Counting range	
Counting range — adjustable	Yes
— adjustable	Yes 0
— adjustable — lower limit	Yes 0 999
— adjustable	0
— adjustable — lower limit — upper limit	0
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> <li>IEC counter</li> </ul>	0 999
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> </ul>	0 999 Yes
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> <li>IEC counter</li> <li>present</li> <li>Type</li> </ul>	0 999 Yes SFB
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul>	0 999 Yes SFB
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul> S7 times	0 999 Yes SFB Unlimited (limited only by RAM capacity)
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul> S7 times <ul> <li>Number</li> </ul>	0 999 Yes SFB Unlimited (limited only by RAM capacity)
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul> S7 times <ul> <li>Number</li> </ul> Retentivity	0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes 0
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul> S7 times <ul> <li>Number</li> </ul> Retentivity <ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul>	0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes 0 2 047
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul> S7 times <ul> <li>Number</li> </ul> Retentivity <ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> <li>preset</li> </ul>	0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes 0
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul> S7 times <ul> <li>Number</li> </ul> Retentivity <ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> <li>preset</li> </ul> Time range	0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes 0 2 047 No retentivity
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul> S7 times <ul> <li>Number</li> </ul> Retentivity <ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> <li>preset</li> </ul> Time range <ul> <li>lower limit</li> </ul>	0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes 0 2 047 No retentivity 10 ms
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul> S7 times <ul> <li>Number</li> </ul> Retentivity <ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> <li>preset</li> </ul> Time range <ul> <li>lower limit</li> <li>upper limit</li> <li>upper limit</li> <li>upper limit</li> <li>upper limit</li> <li>upper limit</li> <li>upper limit</li> </ul>	0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes 0 2 047 No retentivity
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul> S7 times <ul> <li>Number</li> </ul> Retentivity <ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> <li>preset</li> </ul> Time range <ul> <li>lower limit</li> <li>upper limit</li> <li>upper limit</li> <li>upper limit</li> <li>upper limit</li> </ul> IEC timer	0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes 0 2 047 No retentivity 10 ms 9 990 s
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul> S7 times <ul> <li>Number</li> </ul> Retentivity <ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> <li>preset</li> </ul> Time range <ul> <li>lower limit</li> <li>upper limit</li> <li>upper limit</li> <li>upper limit</li> <li>preset</li> </ul> Iter time range <ul> <li>lower limit</li> <li>upper limit</li> <li>upper limit</li> <li>upper limit</li> <li>upper limit</li> </ul> IEC timer <ul> <li>present</li> </ul>	0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes 0 2 047 No retentivity 10 ms 9 990 s
<ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> </ul> IEC counter <ul> <li>present</li> <li>Type</li> <li>Number</li> </ul> S7 times <ul> <li>Number</li> </ul> Retentivity <ul> <li>adjustable</li> <li>lower limit</li> <li>upper limit</li> <li>preset</li> </ul> Time range <ul> <li>lower limit</li> <li>upper limit</li> <li>upper limit</li> <li>upper limit</li> <li>upper limit</li> <li>lower limit</li> </ul> IEC timer	0 999 Yes SFB Unlimited (limited only by RAM capacity) 2 048 Yes 0 2 047 No retentivity 10 ms 9 990 s

Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	700 kbyte
Flag	
• Size, max.	8 192 byte
<ul> <li>Retentivity available</li> </ul>	Yes; From MB 0 to MB 8 191
<ul> <li>Retentivity preset</li> </ul>	MB 0 to MB 15
<ul> <li>Number of clock memories</li> </ul>	8; 1 memory byte
Data blocks	
<ul> <li>Retentivity adjustable</li> </ul>	Yes; via non-retain property on DB
Retentivity preset	Yes
Local data	
<ul> <li>per priority class, max.</li> </ul>	32 768 byte; Max. 2048 bytes per block
Address area	
I/O address area	
Inputs	8 192 byte
Outputs	8 192 byte
of which distributed	
— Inputs	8 192 byte
— Outputs	8 192 byte
Process image	
• Inputs	8 192 byte
Outputs	8 192 byte
<ul> <li>Inputs, adjustable</li> </ul>	8 192 byte
Outputs, adjustable	8 192 byte
Inputs, default	256 byte
Outputs, default	256 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	65 536
— of which central	1 024
Outputs	65 536
— of which central	1 024
Analog channels	
Inputs	4 096
— of which central	256
Outputs	4 096
— of which central	256
Hardware configuration	
Number of DP masters	
integrated	2
• via CP	4
Number of operable FMs and CPs (recommended)	
• FM	8
• CP, PtP	8
• CP, FIP • CP, LAN	° 10
Rack	
Racks, max.	4
<ul> <li>Modules per rack, max.</li> </ul>	8
Time of day	
Clock	Ver
Hardware clock (real-time)	Yes
retentive and synchronizable	Yes
Backup time	6 wk; At 40 °C ambient temperature
<ul> <li>Deviation per day, max.</li> </ul>	10 s; Typ.: 2 s
Debewier of the electric DOM/ED ON	Clock continues running after POWER OFF
<ul> <li>Behavior of the clock following POWER-ON</li> <li>Behavior of the clock following expiry of backup</li> </ul>	Clock continues to run with the time at which the power failure occurred

period	
Operating hours counter	
Number	4
Number/Number range	0 to 3
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
• to MPI, slave	Yes
• to DP, master	Yes; With DP slave only slave clock
• 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	0
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	2; Combined MPI / PROFIBUS DP and PROFIBUS DP
Number of RS 422 interfaces	0
1 Interface	
1. Interface	
1. Interface Interface type	Integrated RS 485 interface
	Integrated RS 485 interface Yes
Interface type	-
Interface type Isolated	-
Interface type Isolated Interface types	Yes
Interface type Isolated Interface types • RS 485	Yes Yes 150 mA
Interface type Isolated Interface types • RS 485 • Output current of the interface, max.	Yes Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master	Yes Yes 150 mA
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave	Yes Yes 150 mA Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection	Yes Yes 150 mA Yes Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI	Yes Yes 150 mA Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible No
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection	Yes Yes 150 mA Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services	Yes Yes 150 mA Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services — PG/OP communication	Yes Yes 150 mA Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services - PG/OP communication - Routing	Yes Yes 150 mA Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s Yes Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication	Yes Yes 150 mA Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s Yes Yes Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication	Yes Yes 150 mA Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s Yes Yes Yes Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication	Yes Yes 150 mA Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s Yes Yes Yes Yes Yes Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 communication, as client	Yes Yes 150 mA Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s Yes Yes Yes Yes Yes Yes Yes No; but via CP and loadable FB
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication, as client — S7 communication, as server	Yes Yes 150 mA Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s Yes Yes Yes Yes Yes Yes
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server PROFIBUS DP master	Yes Yes 150 mA Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 communication - S7 communication - S7 communication, as client - S7 communication, as server PROFIBUS DP master • Transmission rate, max.	Yes Yes 150 mA Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 communication - S7 communication - S7 communication, as client - S7 communication, as server PROFIBUS DP master • Transmission rate, max. • Number of DP slaves, max.	Yes Yes 150 mA Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 communication - S7 communication - S7 communication, as client - S7 communication, as server PROFIBUS DP master • Transmission rate, max. • Number of DP slaves, max. Services	Yes Yes 150 mA Yes Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server PROFIBUS DP master • Transmission rate, max. • Number of DP slaves, max. Services — PG/OP communication	Yes Yes 150 mA Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
Interface type Isolated Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection MPI • Transmission rate, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 communication - S7 communication - S7 communication, as client - S7 communication, as server PROFIBUS DP master • Transmission rate, max. • Number of DP slaves, max. Services	Yes Yes 150 mA Yes Yes Yes Yes; A DP slave at both interfaces simultaneously is not possible No 12 Mbit/s Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye

— S7 basic communication	Yes; I blocks only
— S7 communication	Yes
<ul> <li>— S7 communication, as client</li> </ul>	No
<ul> <li>— S7 communication, as server</li> </ul>	Yes
— Equidistance	Yes
<ul> <li>— Isochronous mode</li> </ul>	No
- SYNC/FREEZE	Yes
<ul> <li>Activation/deactivation of DP slaves</li> </ul>	Yes
<ul> <li>— Number of DP slaves that can be</li> </ul>	8
simultaneously activated/deactivated, max.	
— Direct data exchange (slave-to-slave	Yes; as subscriber
communication)	Vee
- DPV1	Yes
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
User data per DP slave	
— 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
<ul> <li>Address area, max.</li> </ul>	32
User data per address area, max.	32 byte
Services	
— PG/OP communication	Yes
— Routing	Yes; with interface active
<ul> <li>— Global data communication</li> </ul>	No
<ul> <li>— S7 basic communication</li> </ul>	No
— S7 communication	Yes
<ul> <li>— S7 communication, as client</li> </ul>	No
<ul> <li>— S7 communication, as server</li> </ul>	Yes; Connection configured on one side only
<ul> <li>Direct data exchange (slave-to-slave</li> </ul>	Yes
communication)	
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
2. Interface	
Interface type	Integrated RS 485 interface
Isolated	Yes
Interface types	
• RS 485	Yes
<ul> <li>Output current of the interface, max.</li> </ul>	200 mA
Protocols	
• MPI	No
<ul> <li>PROFINET IO Controller</li> </ul>	No
PROFINET IO Device	No
PROFINET CBA	No
<ul> <li>PROFIBUS DP master</li> </ul>	Yes
<ul> <li>PROFIBUS DP slave</li> </ul>	Yes; A DP slave at both interfaces simultaneously is not possible
<ul> <li>Open IE communication</li> </ul>	No
Web server	No
PROFIBUS DP master	
<ul> <li>Transmission rate, max.</li> </ul>	12 Mbit/s
Number of DP slaves, max.	124
Services	
— PG/OP communication	Yes
— Routing	Yes

<ul> <li>— Global data communication</li> </ul>	No
<ul> <li>— S7 basic communication</li> </ul>	Yes; I blocks only
— S7 communication	Yes
- S7 communication, as client	No
<ul> <li>— S7 communication, as server</li> </ul>	Yes; Connection configured on one side only
— Equidistance	Yes
— Isochronous mode	Yes; OB 61 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously)
- SYNC/FREEZE	Yes
<ul> <li>Activation/deactivation of DP slaves</li> </ul>	Yes
<ul> <li>— Number of DP slaves that can be simultaneously activated/deactivated, max.</li> </ul>	8
<ul> <li>— Direct data exchange (slave-to-slave communication)</li> </ul>	Yes; as subscriber
— DPV1	Yes
Address area	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
PROFIBUS DP slave	
• GSD file	The latest GSD file is available at: http://www.siemens.com/profibus-gsd
<ul> <li>Transmission rate, max.</li> </ul>	12 Mbit/s
<ul> <li>automatic baud rate search</li> </ul>	Yes; only with passive interface
<ul> <li>Address area, max.</li> </ul>	32
<ul> <li>User data per address area, max.</li> </ul>	32 byte
Services	
— PG/OP communication	Yes
— Routing	Yes; with interface active
— Global data communication	No
<ul> <li>— S7 basic communication</li> </ul>	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	Yes
communication)	
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
3. 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 I-Device functionality
PROFINET IO Device	Yes; Also simultaneously with IO Controller functionality
PROFINET CBA	Yes
PROFIBUS DP master	
	No
PROFIBUS DP slave	No No

Open IE communication	Yes; Via TCP/IP, ISO on TCP, and UDP
Web server	Yes
Media redundancy	Yes
PROFINET IO Controller	103
Transmission rate, max.	100 Mbit/s
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 is possible either on DP or PROFINET IO (not simultaneously)
— Shared device	Yes
— Prioritized startup	Yes
<ul> <li>Number of IO devices with prioritized startup, max.</li> </ul>	32
<ul> <li>— Number of connectable IO Devices, max.</li> </ul>	256
— Of which IO devices with IRT, max.	64
— of which in line, max.	64
<ul> <li>— Number of IO Devices with IRT and the option "high flexibility"</li> </ul>	256
— of which in line, max.	61
<ul> <li>— Number of connectable IO Devices for RT,</li> </ul>	256
max.	200
— of which in line, max.	256
<ul> <li>Activation/deactivation of IO Devices</li> </ul>	Yes
<ul> <li>Number of IO Devices that can be simultaneously activated/deactivated, max.</li> </ul>	8
<ul> <li>— IO Devices changing during operation (partner ports), supported</li> </ul>	Yes
<ul> <li>— Number of IO Devices per tool, max.</li> </ul>	8
<ul> <li>Device replacement without swap medium</li> </ul>	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.	8 kbyte
— Outputs, max.	8 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: 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,	2
max.	
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	
<ul> <li>Number of connections, max.</li> </ul>	32
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
<ul> <li>Keep-alive function, supported</li> </ul>	Yes
Protocols	
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
<ul> <li>— Number of connections, max.</li> </ul>	32
<ul> <li>— Data length for connection type 01H, max.</li> </ul>	1 460 byte
<ul> <li>— Data length for connection type 11H, max.</li> </ul>	32 768 byte
<ul> <li>— several passive connections per port, supported</li> </ul>	Yes
ISO-on-TCP (RFC1006)	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	32
— Data length, max.	32 768 byte
• UDP	Yes; via integrated PROFINET interface and loadable FBs
<ul> <li>Number of connections, max.</li> </ul>	32
— Data length, max.	1 472 byte
Web server	
<ul> <li>supported</li> </ul>	Yes
<ul> <li>User-defined websites</li> </ul>	Yes
Number of HTTP clients	5
Communication functions	
PG/OP communication	Yes
Data record routing	Yes
Global data communication	
<ul> <li>supported</li> </ul>	Yes
<ul> <li>Number of GD loops, max.</li> </ul>	8
<ul> <li>Number of GD packets, max.</li> </ul>	8
<ul> <li>Number of GD packets, transmitter, max.</li> </ul>	8
<ul> <li>Number of GD packets, receiver, max.</li> </ul>	8
<ul> <li>Size of GD packets, max.</li> </ul>	22 byte
<ul> <li>Size of GD packet (of which consistent), max.</li> </ul>	22 byte
S7 basic communication	
<ul> <li>supported</li> </ul>	Yes
<ul> <li>User data per job, max.</li> </ul>	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	
<ul> <li>supported</li> </ul>	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
PROFINET CBA (at set setpoint communication load)	
Setpoint for the CPU communication load	20 %
Number of remote interconnection partners	32
Number of functions, master/slave	50
Total of all master/slave connections	3 000
<ul> <li>Data length of all incoming connections</li> </ul>	24 000 byte

master/slave, max.	
<ul> <li>Data length of all outgoing connections master/slave, max.</li> </ul>	24 000 byte
Number of device-internal and PROFIBUS interconnections	1 000
<ul> <li>Data length of device-internal und PROFIBUS interconnections, max.</li> </ul>	8 000 byte
<ul> <li>Data length per connection, max.</li> </ul>	1 400 byte
Remote interconnections with acyclic transmission	
— Sampling interval, min.	200 ms
<ul> <li>Number of incoming interconnections</li> </ul>	100
<ul> <li>Number of outgoing interconnections</li> </ul>	100
<ul> <li>— Data length of all incoming interconnections, max.</li> </ul>	3 200 byte
<ul> <li>— Data length of all outgoing interconnections, max.</li> </ul>	3 200 byte
<ul> <li>Data length per connection, max.</li> </ul>	1 400 byte
Remote interconnections with cyclic transmission	
— Transmission frequency: Transmission interval, min.	1 ms
<ul> <li>— Number of incoming interconnections</li> </ul>	300
<ul> <li>— Number of outgoing interconnections</li> </ul>	300
<ul> <li>— Data length of all incoming interconnections, max.</li> </ul>	4 800 byte
<ul> <li>— Data length of all outgoing interconnections, max.</li> </ul>	4 800 byte
<ul> <li>— Data length per connection, max.</li> </ul>	450 byte
HMI variables via PROFINET (acyclic)	
<ul> <li>— Number of stations that can log on for HMI variables (PN OPC/iMap)</li> </ul>	3; 2x PN OPC/1x iMap
— HMI variable updating	500 ms
<ul> <li>— Number of HMI variables</li> </ul>	600
<ul> <li>Data length of all HMI variables, max.</li> </ul>	9 600 byte
PROFIBUS proxy functionality	
— supported	Yes
<ul> <li>— Number of linked PROFIBUS devices</li> </ul>	32
— Data length per connection, max.	240 byte; Slave-dependent
Number of connections	
overall	32
<ul> <li>usable for PG communication</li> </ul>	31
<ul> <li>reserved for PG communication</li> </ul>	1
<ul> <li>adjustable for PG communication, min.</li> </ul>	1
<ul> <li>adjustable for PG communication, max.</li> </ul>	31
<ul> <li>usable for OP communication</li> </ul>	31
<ul> <li>reserved for OP communication</li> </ul>	1
<ul> <li>— adjustable for OP communication, min.</li> </ul>	1
<ul> <li>adjustable for OP communication, max.</li> </ul>	31
<ul> <li>usable for S7 basic communication</li> </ul>	30
<ul> <li>reserved for S7 basic communication</li> </ul>	0
<ul> <li>— adjustable for S7 basic communication, min.</li> </ul>	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
<ul> <li>total number of instances, max.</li> </ul>	32
usable for routing	X1 as MPI: max. 10; X1 as DP master: max. 24; X1 as DP slave (active): max. 14; X2 as DP master: max. 24; X2 as DP slave (active): max. 14; X3 as PROFINET: 48 max.
S7 message functions	
Number of login stations for message functions, max.	32; Depending on the configured connections for PG/OP and S7 basic

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
<ul> <li>Number of variables, max.</li> </ul>	30
— of which status variables, max.	30
- of which control variables, max.	14
Forcing	
Forcing	Yes
<ul> <li>Forcing, variables</li> </ul>	Inputs, outputs
<ul> <li>Number of variables, max.</li> </ul>	10
Diagnostic buffer	
• present	Yes
<ul> <li>Number of entries, max.</li> </ul>	500
— adjustable	No
— of which powerfail-proof	100
<ul> <li>Number of entries readable in RUN, max.</li> </ul>	499
— adjustable	Yes; From 10 to 499
— preset	10
Service data	
can be read out	Yes
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	0° 00
Configuration	
Configuration software	
• STEP 7	Yes; V5.5 or higher
Programming	
Command set	see instruction list
Nesting levels	8
System functions (SFC)	see instruction list
System function blocks (SFB)	see instruction list
Programming language	N/
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL — CFC	Yes
	Yes
— GRAPH — HiGraph®	Yes
Know-how protection	
User program protection/password protection	Yes
Block encryption	Yes; With S7 block Privacy
Dimensions	
Width	120 mm
	120 mm 125 mm
Height	125 mm 130 mm
Depth Weighte	
Weights	1 250 g
Weight, approx.	1 250 g
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