SIEMENS

Data sheet

6ES7318-3FL01-0AB0



SIMATIC S7-300 CPU319F-3 PN/DP, Central processing unit with 2.5 MB work memory, 1st interface MPI/DP 12 Mbit/s, 2nd interface DP master/slave 3rd interface Ethernet PROFINET, Micro Memory Card required

General information	
HW functional status	01
Firmware version	V3.2
Engineering with	
Programming package	STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
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	
Mains/voltage failure stored energy time	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

Power loss Tempor	Inrush current, typ.	4 A
Fower loss, typ. Identify	l²t	1.2 A²·s
Fower loss, typ. Identify	D	
Work memory Integrated Integrate		14 W
Processing times	1 ower 1000, typ.	17 **
integrated expandable expandable Size of retentive memory for retentive data blocks Load memory Plug-in (MMC) Plug-in (MMC) Plug-in (MMC) Annual MMC (after last programming), min. Backup present without battery Pu processing times For bit operations, typ. For fixed point arithmetic, typ. For fixed point arithmetic, typ. O.01 µs for floating point arithmetic, typ. 0.04 µs PU-blocks Number of blocks (total) Number, max. Size, max. 4 096; Number range: 1 to 16000 4 kbyte FC Number, max. 4 096; Number range: 0 to 7999 4 kbyte FC Number, max. 4 096; Number range: 0 to 7999 4 kbyte FC Number, max. 4 096; Number range: 0 to 7999 4 kbyte FC Number, max. 4 096; Number range: 0 to 7999 5 kbyte FC Number, max. 4 096; Number range: 0 to 7999 5 kbyte FC Number, max. 4 096; Number range: 0 to 7999 5 kbyte FC Number, max. 5 ize, max. 6 kbyte FC Number of free cycle OBs Number of free cycle OBs Number of free cycle OBs Number of time alarm OBs Number of time alarm OBs 1; OB 1 1; OB 10	Memory	
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Size of retentive memory for retentive data blocks Load memory Plug-in (MMC) Yes Plug-in (MMC), max. Data management on MMC (after last programming), min. Backup present ves without battery PU processing times for bit operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. 0.01 µs for floating point arithmetic, typ. 0.04 µs PU-blocks Number of blocks (total) Number, max. Size, max. 4 096; Number range: 1 to 16000 A tbyte Number, max. 4 096; Number range: 0 to 7999 A tbyte Number, max. 4 096; Number range: 0 to 7999 A tbyte Number, max. 4 096; Number range: 0 to 7999 A tbyte Number, max. A thyte Number, max. A thyte Number, max. A thyte Number, max. A thyte A thyte Number range: 0 to 7999 A tbyte Number, max. A thyte A thyte Number range: 0 to 7999 A tbyte Number, max. A thyte A thyte Number range: 0 to 7999 A tbyte Number range: 0 to 7999 A tbyte Number, max. A thyte Number range: 0 to 7999 A tbyte Number range: 0 to 7999 A	•	
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Plug-in (MMC), max. Plug-in (MMC), max. A Mbyte Data management on MMC (after last programming), min. Backup present present present processing times For bit operations, typ. To word operati	Load memory	
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programming), min. Backup	Plug-in (MMC), max.	8 Mbyte
• present • without battery PU processing times for bit operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. O.01 O.04 DB • Number, max. • Size, max. • Size, max. • Size, max. OB • Size, max. OB • Size, max. OB • Size, max. • Size, max. OB • Number of free cycle OBs • Number of time alarm OBs • Number of time alarm OBs	-	10 y
• without battery • without battery Yes PU processing times for bit operations, typ. 0.004 µs 0.001 µs 0.01 µs 0.01 µs 0.01 µs 0.04 µs 0.01 µs 0.04 µs 0.04 µs 0.04 µs 0.05 PU-blocks Number of blocks (total) • Number, max. • Size, max. • Number of free cycle OBs • Number of time alarm OBs • Size, Si	Backup	
FPU processing times for bit operations, typ. for word operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. DOU	• present	Yes
for bit operations, typ. for word operations, typ. for word operations, typ. for fixed point arithmetic, typ. for floating point arithmetic, typ. ### O.01 \mus ### O.04 \mus ### O.05 \mus ### O.04 \mus ### O.06 \mus ### O.04 \mus ### O.04 \mus ### O.04 \mus ### O.04 \mus ### O.06 \mus ### O.06 \mus ### O.06 \mus ### O.06 \mus ### O.07 \mus ### O.07 \mus ### O.07 \mus ### O.08 \mus ### O.09 \mus ### O.04 \mus ### O.06	• without battery	Yes
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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 64 kbyte FB Number, max. 5 size, max. 4 096; Number range: 0 to 7999 64 kbyte FC Number, max. 5 size, max. 4 096; Number range: 0 to 7999 64 kbyte FC Number, max. 5 size, max. 64 kbyte OB Size, max. 64 kbyte OB Number of free cycle OBs Number of time alarm OBs 1; OB 1		
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can be reduced by the MMC used. DB Number, max. 4 096; Number range: 1 to 16000 64 kbyte FB Number, max. 4 096; Number range: 0 to 7999 Size, max. 64 kbyte FC Number, max. 4 096; Number range: 0 to 7999 64 kbyte FC Number, max. 4 096; Number range: 0 to 7999 64 kbyte Size, max. 64 kbyte OB Size, max. 64 kbyte Number of free cycle OBs Number of time alarm OBs 1; OB 1	CPU-blocks	
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Number, max.	Number, max.	4 096; Number range: 1 to 16000
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 Number, max. Size, max. Size, max. Size, max. Size, max. Number of free cycle OBs Number of time alarm OBs 1; OB 1 1; OB 10 	Number, max.	4 096; Number range: 0 to 7999
 Number, max. Size, max. Size, max. Size, max. Size, max. Number of free cycle OBs Number of time alarm OBs 1; OB 1 OB 10 	• Size, max.	64 kbyte
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 Size, max. Number of free cycle OBs Number of time alarm OBs 1; OB 1 1; OB 10 	Number, max.	4 096; Number range: 0 to 7999
 Size, max. Number of free cycle OBs Number of time alarm OBs 1; OB 1 1; OB 10 	• Size, max.	64 kbyte
 Number of free cycle OBs Number of time alarm OBs 1; OB 1 1; OB 10 	OB	
• Number of time alarm OBs 1; OB 10	• Size, max.	64 kbyte
	 Number of free cycle OBs 	1; OB 1
• Number of delay alarm OBs 2; OB 20, 21	 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 (OB 35: smallest settable clock pulse = 500 μs)
Number of process alarm OBs	1; OB 40
Number of DPV1 alarm OBs	3; OB 55, 56, 57
 Number of isochronous mode OBs 	1; OB 61
Number of startup OBs	1; OB 100
 Number of asynchronous error OBs 	6; OB 80, 82, 83, 85, 86, 87 (OB83 only for PROFINET IO)
 Number of synchronous error OBs 	2; OB 121, 122
Nesting depth	
per priority class	16
 additional within an error OB 	4

ounters, timers and their retentivity	
S7 counter	
• Number	2 048
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	2 047
— preset	Z 0 to Z 7
Counting range	
— can be set	Yes
— lower limit	0
— upper limit	999
IEC counter	
Number	Unlimited (limited only by RAM capacity)
S7 times	
Number	2 048
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	2 047
— preset	No retentivity
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)

Data areas and their retentivity	
retentive data area in total	All, max. 700 KB

Flag	
Number, max.	8 192 byte
Retentivity available	Yes; from MB 0 to MB 8191
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	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
 Inputs, adjustable 	8 192 byte
Outputs, adjustable	8 192 byte
 Inputs, default 	1 024 byte
Outputs, default	1 024 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	2
• integrated	2
• via CP	4

Number of operable FMs and CPs (recommended)	
• FM	8
• CP, PtP	8
• CP, LAN	10
Rack	
• Racks, max.	4
Modules per rack, max.	8
Time of Jan.	
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	Clock continues to run with the time at which the power failure
period	occurred
Operating hours counter	
Number	4
 Number/Number range 	0 to 3
 Range of values 	0 to 2^31 hours (when using SFC 101)
• 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
Acceptance	
Analog inputs Number of analog inputs	0
realiser of analog inputs	•
Analog outputs	
Number of analog outputs	0
Interfaces	
Number of industrial Ethernet interfaces	1

Number of PROFINET interfaces	1
Number of RS 485 interfaces	2
Number of RS 422 interfaces	0
1. Interface	
Interface type	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	150 mA
Functionality	
• MPI	Yes
PROFIBUS DP master	Yes
PROFIBUS DP slave	Yes; A DP slave at both interfaces simultaneously is not possible
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
DP master	
Transmission rate, max.	12 Mbit/s
 Number of DP slaves, max. 	124
Services	
— PG/OP communication	Yes
— Routing	Yes
Global data communication	No
 — S7 basic communication 	Yes; I blocks only
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes
— Equidistance	Yes
— Isochronous mode	No
— SYNC/FREEZE	Yes
Activation/deactivation of DP slaves	Yes
Number of DP slaves that can be	8
simultaneously activated/deactivated, max.	
Direct data exchange (slave-to-slave)	Yes; As subscriber
communication)	

— 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
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; with interface active
 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 	Yes
communication)	
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
2. Interface	
Interface type	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA
Functionality	
• MPI	No
PROFINET IO Controller	No
PROFINET IO Device	No
PROFINET CBA	No
 PROFIBUS DP master 	Yes
 PROFIBUS DP slave 	Yes; A DP slave at both interfaces simultaneously is not possible
Open IE communication	No
Web server	No
DP master	

• Transmission rate, max.	12 Mbit/s
 Number of DP slaves, max. 	124
Services	
— PG/OP communication	Yes
— Routing	Yes
 Global data communication 	No
 S7 basic communication 	Yes; I blocks only
— S7 communication	Yes
 S7 communication, as client 	No
— S7 communication, as server	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
 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.	8 kbyte
— Outputs, max.	8 kbyte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
P slave	
• GSD file	The latest GSD file is available at: http://www.siemens.com/profibus-gsd
• 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; with interface active
 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

— DPV1 No Transfer memory — Inputs 244 byte	 Direct data exchange (slave-to-slave communication) 	Yes
— Inputs 244 byte	— DPV1	No
P 1 T	Transfer memory	
	— Inputs	244 byte
— Outputs 244 byte	— Outputs	244 byte

— Outputs	244 byte
3. Interface	
Interface type	PROFINET
Physics	Ethernet RJ45
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	
Number of ports	2
• integrated switch	Yes
Media redundancy	
• supported	Yes
 Switchover time on line break, typ. 	200 ms; PROFINET MRP
Number of stations in the ring, max.	50
Functionality	
• 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
Open IE communication	Yes; Via TCP/IP, ISO on TCP, and UDP
Web server	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: 16, max.
5. 33 <u>a</u> 34	number of instances: 32
— Isochronous mode	Yes; OB 61 - isochronous mode is possible either on DP or PROFINET IO (not simultaneously)
— Open IE communication	Yes; Via TCP/IP, ISO on TCP, and UDP
— Shared device	Yes

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	256 64		
Of which IO devices with IRT, max.of which in line, max.			
— of which in line, max.	04		
 Number of IO Devices with IRT and the 	64		
option "high flexibility"	256		
— of which in line, max.	61		
Number of connectable IO Devices for RT,	256		
max.			
— of which in line, max.	256		
 Activation/deactivation of IO Devices 	Yes		
 Number of IO Devices that can be 	8		
simultaneously activated/deactivated, max.			
 IO Devices changing during operation 	Yes		
(partner ports), supported			
 Number of IO Devices per tool, max. 	8		
 Device replacement without swap medium 	Yes		
— Send cycles	$250~\mu s,500~\mu s,1~ms;2~ms,4~ms$ (not in the case of IRT with "high flexibility" option)		
— Updating time	250 μs to 512 ms (depending on the operating mode, see Manual "S7-300 CPU 31xC and CPU 31x, Technical Data" for more details)		
Address area			
— Inputs, max.	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		
— Open IE communication	Yes; Via TCP/IP, ISO on TCP, and UDP		
— 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 	2		
device, 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			
Number of connections, max.	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		
 Keep-alive function, supported 	Yes		
Protocols			
Open IE communication			
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs		
 Data length for connection type 01H, max. 	1 460 byte		
 Data length for connection type 11H, max. 	32 768 byte		
• ISO-on-TCP (RFC1006)	Yes; via integrated PROFINET interface and loadable FBs		
— Data length, max.	32 768 byte		
• UDP	Yes; via integrated PROFINET interface and loadable FBs		
 Number of connections, max. 	32		
— Data length, max.	1 472 byte		
Web server			
User-defined websites	Yes		
 Number of HTTP clients 	5		
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	Yes; Via 2nd PROFIBUS DP or PROFINET interface		
Communication functions			
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 (of which consistent), max. 76 byte: 76 bytes (with X. SEND or X. RCV); 64 bytes (with X. PUT or X.GET as server) 77 communication User data per job, max. User data per job, max. 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 S5 compatible communication S6 supported Ves; via CP and loadable FC Web server S7 supported Ves; via CP and loadable FC Web server S8 supported PROFINET CBA (at set setpoint communication load) S8 supported PROFINET GBA (at set setpoint communication load) S8 supported S9 supported Ves Ves Ves Ves Ves Ves Ves V				
S7 communication • supported • sa server • as client • User data per job, max. • 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) • supported • supported • Set point for the CPU communication load) • Set point for the CPU communication load • Number of functions, master/slave • Total of all master/slave connections master/slave, max. • Data length of all outgoing connections interconnections, max. • Data length of device-internal and PROFIBUS interconnections, max. • Data length of device-internal und PROFIBUS interconnections, max. • Data length of all incoming time, min. — Number of incoming interconnections — Data length of all outgoing connections — Data length of all incoming interconnections — Data length of all outgoing interconnections — Data length of all outgoing interconnections — Data length of all outgoing interconnections, max. — Data length of all outgoing interconnections with cyclic transmission — Transmission frequency: Transmission interval, min. I ms	 User data per job, max. 	76 byte		
* supported * as server * as client * as server * as client * as server * as client * Ves; 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 * See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication) S6 compatible communication * supported * See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication) S7 compatible communication * supported * See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication) S6 compatible communication * supported * Yes * Yes * Yes * Wes * See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFBs/FBs/FBs and of the SF	 User data per job (of which consistent), max. 			
*as server *as client *as conactions *and of the SFCs/FCs of S7 Communication) *and of the SFCs/FCs of S7 Communication) *as conactions *as conactions *and to characteristics *and	S7 communication			
* as server * as client * Ves: 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 * Supported * Yes; via CP and loadable FC Web serve * Supported * Yes * PROFINET CBA (at set setpoint communication load) * Setpoint for the CPU communication load * Number of remote interconnection partners * Number of functions, master/slave * Total of all master/slave connections * Data length of all incoming connections master/slave, max. * Data length of all outgoing connections master/slave, max. * Data length of device-internal and PROFIBUS interconnections, max. * Data length of device-internal und PROFIBUS interconnections, max. * Data length per connection, max. * Pata length of outgoing interconnections * Data length of outgoing interconnections * Data length of all incoming interconnections * Data length of all outgoing interconnections, max. * Data length of all outgoing interconnections with cyclic transmission * Transmission frequency: Transmission * Transmission frequency: Transmission * Transmission frequency: Transmission * I ms **I m	• supported	Yes		
CP and loadable FB See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication) * supported * supported * supported * yes; via CP and loadable FC * Web server * supported * Setpoint for the CPU communication load) * Setpoint for the CPU communication load * Number of functions, master/slave * Number of functions, master/slave * Total of all master/slave connections * Data length of all incoming connections * master/slave, max. * Number of device-internal and PROFIBUS interconnections * Data length of device-internal und PROFIBUS interconnections, max. * Data length per connection, max. * Data length per connection, max. * Data length of all incoming interconnections * Data length of outgoing interconnections * Data length of outgoing interconnections * Data length of outgoing interconnections * Data length of all incoming interconnections with acyclic transmission * Sampling frequency: Sampling time, min. * Number of outgoing interconnections * Data length of all incoming interconnections, max. * Data length of all outgoing interconnections with cyclic transmission * Transmission frequency: Transmission * Transmission frequency: Transmission * Transmission frequency: Transmission * Transmission frequency: Transmission * I ms				
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Web server • supported Yes PROFINET CBA (at set setpoint communication load) 20 % • 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 • Data length of all incoming connections master/slave, max. 24 000 byte • Data length of device-internal and PROFIBUS interconnections 1 000 • Data length of device-internal und PROFIBUS interconnections, max. 1 400 byte • Data length per connection, max. 1 400 byte Remote interconnections with acyclic transmission 200 ms — Number of incoming interconnections 100 — Number of outgoing interconnections 100 — Number of outgoing interconnections 100 — Data length of all incoming interconnections 3 200 byte interconnections, max. — Data length of all outgoing interconnections, max. 1 400 byte Remote interconnections with cyclic transmission 1 400 byte Remote interconnections with cyclic transmission 1 ms	S5 compatible communication			
Supported PROFINET CBA (at set setpoint communication load) Setpoint for the CPU communication load Number of remote interconnection partners Number of functions, master/slave Total of all master/slave connections Data length of all incoming connections master/slave, max. Data length of all outgoing connections master/slave, max. Number of device-internal and PROFIBUS interconnections Data length of device-internal und PROFIBUS interconnections, max. Data length of device-internal und PROFIBUS interconnections, max. Data length per connection, max. 1 400 byte Remote interconnections with acyclic transmission — Sampling frequency: Sampling time, min. — Number of outgoing interconnections 100 — Data length of all incoming interconnections, max. — Data length of all outgoing interconnections, max. — Data length of all outgoing interconnections, max. — Data length per connection, max. 1 400 byte Remote interconnections, max. — Data length of all outgoing interconnections, max. — Data length per connection, max. 1 400 byte Remote interconnections with cyclic transmission — Transmission frequency: Transmission — Transmission frequency: Transmission interval, min.	• supported	Yes; via CP and loadable FC		
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Data length of all incoming connections master/slave, max. Data length of all outgoing connections master/slave, max. Number of device-internal and PROFIBUS interconnections Data length of device-internal und PROFIBUS interconnections, max. Data length per connection, max. Data length per connection, max. Data length per connections with acyclic transmission — Sampling frequency: Sampling time, min. Number of incoming interconnections — Number of outgoing interconnections — Data length of all incoming interconnections, max. — Data length of all outgoing interconnections, max. — Data length per connection, max. 1 400 byte Remote interconnections with cyclic transmission — Transmission frequency: Transmission interval, min.	 Number of functions, master/slave 	50		
master/slave, max. • Data length of all outgoing connections master/slave, max. • Number of device-internal and PROFIBUS interconnections • Data length of device-internal und PROFIBUS interconnections, max. • Data length per connection, max. • Data length per connection, max. • Data length per connection, max. 1 400 byte Remote interconnections with acyclic transmission — Sampling frequency: Sampling time, min. — Number of incoming interconnections — Number of outgoing interconnections — Data length of all incoming interconnections, max. — Data length of all outgoing interconnections, max. — Data length of all outgoing interconnections, max. — Data length per connection, max. 1 400 byte Remote interconnections with cyclic transmission — Transmission frequency: Transmission interval, min.	 Total of all master/slave connections 	3 000		
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Remote interconnections with acyclic transmission — Sampling frequency: Sampling time, min. — Number of incoming interconnections — Number of outgoing interconnections — Data length of all incoming interconnections, max. — Data length of all outgoing interconnections, max. — Data length per connection, max. — Data length per connection, max. 1 400 byte Remote interconnections with cyclic transmission — Transmission frequency: Transmission 1 ms interval, min.	_	8 000 byte		
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 — Data length of all incoming interconnections, max. — Data length of all outgoing interconnections, max. — Data length per connection, max. — Data length per connection, max. 1 400 byte Remote interconnections with cyclic transmission — Transmission frequency: Transmission interval, min. 	 Number of incoming interconnections 	100		
 — Data length of all incoming interconnections, max. — Data length of all outgoing interconnections, max. — Data length per connection, max. — Data length per connection, max. 1 400 byte Remote interconnections with cyclic transmission — Transmission frequency: Transmission interval, min. 	 Number of outgoing interconnections 	100		
interconnections, max. — Data length per connection, max. 1 400 byte Remote interconnections with cyclic transmission — Transmission frequency: Transmission interval, min.		3 200 byte		
 — Data length per connection, max. 1 400 byte Remote interconnections with cyclic transmission — Transmission frequency: Transmission interval, min. 1 ms 		3 200 byte		
— Transmission frequency: Transmission 1 ms interval, min.	— Data length per connection, max.	1 400 byte		
— Transmission frequency: Transmission 1 ms interval, min.	Remote interconnections with cyclic transmission			
— Number of incoming interconnections 300	— Transmission frequency: Transmission	1 ms		
	 Number of incoming interconnections 	300		
— Number of outgoing interconnections 300	 Number of outgoing interconnections 	300		

 Data length of all incoming interconnections, max. 	4 800 byte		
 Data length of all outgoing interconnections, max. 	4 800 byte		
— Data length per connection, max.	450 byte		
HMI variables via PROFINET (acyclic)			
 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 	600		
 Data length of all HMI variables, max. 	9 600 byte		
PROFIBUS proxy functionality			
— supported	Yes		
 Number of linked PROFIBUS devices 	32		
 Data length per connection, max. 	240 byte; Slave-dependent		
Number of connections			
• overall	32		
 usable for PG communication 	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, 	0		
min.			
 — 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. 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 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		
— of which powerfail-proof	100		
 Number of entries readable in RUN, max. 	499		
— can be set	Yes; From 10 to 499		
— preset	10		
Service data			
• can be read out	Yes		
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C		
• max.	60 °C		
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			
— 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	120 mm		
Height	125 mm		
Depth	130 mm		

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Weight, approx. 1 250 g

last modified: 04/19/2018