SIEMENS

Data sheet

6ES7317-2FK14-0AB0

SIMATIC S7-300 CPU317F-2 PN/DP, Central processing unit with 1.5 MB work memory, 1st interface MPI/DP 12 Mbit/s, 2nd interface Ethernet PROFINET, with 2-port switch, Micro Memory Card required



General information	
HW functional status	01
Firmware version	V3.2
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)	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
² t	1 A²·s
Power loss Power loss, typ.	4.65 W
r ower loss, typ.	4.05 W
Memory	
Work memory	
 integrated 	1 536 kbyte
• expandable	No
 Size of retentive memory for retentive data blocks 	256 kbyte
Load memory	
 Plug-in (MMC) 	Yes
 Plug-in (MMC), max. 	8 Mbyte
 Data management on MMC (after last programming), min. 	10 у
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
CPU-blocks	
Number 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
FB	
• 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
Counters, timers and their retentivity	
S7 counter	540
• Number	512
Retentivity	Ver
— adjustable	Yes
— lower limit	0
— upper limit	511
— preset	Z 0 to Z 7
Counting range	
— adjustable	Yes
— lower limit	0
— upper limit	999
IEC counter	Ver
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
S7 times	512
• Number	512
Retentivity	Ver
— adjustable	Yes
— lower limit	0
— upper limit	511
— preset	No retentivity
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	Ves
• present	Yes SFB
• Type	
Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	

retentive data area in total	All, max. 256 KB
Flag	
 Number, max. 	4 096 byte
 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
Address area	
I/O address area	
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	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 expansion units, max.	3
Number of DP masters	
• integrated	1
• via CP	4
Number of operable FMs and CPs (recommended)	
• FM	8
• CP, PtP	8
• CP, LAN	10

• Racks, max. 4 • Modules per rack, max. 8 Time of day Clock • Hardware clock (real-time) Yes • retentive and synchronizable Yes • Backup time 6 wk; At 40 °C ambient temperature • Deviation per day, max. 10 s; Typ.: 2 s • Bahavior of the clock following POWER-ON Clock continues running after POWER OFF • Bahavior of the clock following expiry of backup period Clock continues to run with the time at which the power failure occurred Operating hours counter 4 • Number 4 • Number 4 • Number of values 0 to 3 • Range of values 0 to 2/31 hours (when using SFC 101) • Granularity 1h • retentive Yes • Look synchronization Yes • Look synchronization Yes • Look MPI, slave Yes • In MP, naster Yes • In AS, slave Yes Digital inputs 0 Oligital outputs 0 Analog inputs 0 Analog outputs 0 Number of analog outputs 0 Number of industrial Ethernet interfaces 1 Number of industrial Ethernet interfaces 1	Rack	
Time of day Clock • Hardware clock (real-time) • retentive and synchronizable • Gives, and the synchronizable • Backup time	 Racks, max. 	4
Clock • Hardware clock (real-time) • Yes • retentive and synchronizable • Backup time • Deviation per day, max. • 10 s; Typ.: 2 s • Behavior of the clock following POWER-ON • Behavior of the clock following expiry of backup period • Clock continuess running after POWER OFF • Number of the clock following expiry of backup period • Clock continuess running after POWER OFF • Number of nalog outputs • Number of digital outputs • Number of nalog inputs • Yes • In AS, slave • Yes • In AS, master • Quiptial outputs • Quiptial Ethermet interfaces • Quiptial Ethermet interfaces • Quiptial E	 Modules per rack, max. 	8
Clock • Hardware clock (real-time) • Yes • retentive and synchronizable • Backup time • Deviation per day, max. • 10 s; Typ.: 2 s • Behavior of the clock following POWER-ON • Behavior of the clock following expiry of backup period • Clock continuess running after POWER OFF • Number of the clock following expiry of backup period • Clock continuess running after POWER OFF • Number of nalog outputs • Number of digital outputs • Number of nalog inputs • Yes • In AS, slave • Yes • In AS, master • Quiptial outputs • Quiptial Ethermet interfaces • Quiptial Ethermet interfaces • Quiptial E	Time of day	
referitive and synchronizable Yes Backup time 6 wit, At 40 °C ambient temperature Deviation per day, max. 10 s; Typ.: 2 s Clock continues running after POWER OFF Dehavior of the clock following POWER-ON Clock continues to run with the time at which the power failure period Clock continues to run with the time at which the power failure occurred Clock continues to run with the time at which the power failure occurred Clock continues to run with the time at which the power failure occurred Clock continues to run with the time at which the power failure occurred Clock continues to run with the time at which the power failure occurred Clock continues to run with the time at which the power failure occurred Clock synchronization Farage of values 0 to 23 hours (when using SFC 101) Faranularity 1 h Fretentive Yes: Must be restarted at each restart Clock synchronization Fusported Yes in AS, master Yes in AS, master in AS, slave Yes Number of digital inputs 0 Digital inputs 0 Digital outputs Number of analog inputs 0 Analog inputs 0 Analog inputs 0 Analog outputs 0 Analog outputs 0 Number of analog outputs 0 Number of analog outputs 0 Number of analog outputs 1 Number of analog outputs 0 Interfaces 1 Number of RS 485 interfaces 1 Number of RS 485 interfaces 1 Number of RS 485 interfaces 0 1. Interface		
• retentive and synchronizable Yes • Backup time 6 wk; At 40 °C ambient temperature • Deviation per day, max. 10 \$; Typ. 2 \$ • Behavior of the clock following POWER-ON Clock continues running after POWER OFF • Behavior of the clock following expiry of backup period Clock continues to run with the time at which the power failure occurred • Number 4 • Number 4 • Number 10 3 • Range of values 0 to 3 • Granularity 1 h • retentive Yes; Must be restarted at each restart Clock synchronization Yes • to MPI, master Yes • to MPI, slave Yes • in AS, master Yes • in AS, naster Yes • in AS, slave 0 Digital inputs 0 Analog inputs 0 Analog inputs 0 Analog inputs 0 Analog outputs 0 Number of analog inputs 0 Analog inputs 0 Analog inputs 0 Number of analog outputs 0	 Hardware clock (real-time) 	Yes
Backup time6 wk: At 40 °C ambient temperatureDeviation per day, max.10 s; Typ. 2 sDehavior of the clock following POWER-ONClock continues running after POWER OFFDehavior of the clock following expiry of backupClock continues to run with the time at which the power failure occurredOperating hours counter4Number4Number range0 to 3Range of values0 to 2^31 hours (when using SFC 101)Granularity1 h• retentiveYes; Must be restarted at each restartClock synchronizationYes• supportedYes• in AS, masterYes• in AS, slaveYesDigital inputs0Digital inputs0Digital outputs0Analog outputs0Analog outputs0Analog outputs0Analog outputs0Number of analog outputs0Analog outputs0Number of PolYINET Interface		Yes
• Deviation per day, max.10 s; Typ. 2 s• Behavior of the clock following POWER-ON Behavior of the clock following expiry of backup periodClock continues running after POWER OFF Clock continues to run with the time at which the power failure accurred• Number4• Number4• Number (Number range0 to 3• Range of values0 to 2^31 hours (when using SFC 101)• Granularity1 h• retentiveYes• supportedYes• to MPI, nasterYes• to MPI, slaveYes• in AS, masterYes• in AS, slaveYesDigital inputs0Digital inputs0Analog inputs0Analog inputs0Number of analog inputs0Number of analog outputs0Number of PROFINET interfaces1Number of PROFINET interfaces0Number of PROFINET interfaces1Number of PROFINET interfaces1Number of PROFINET interfaces1Number of PROFINET interfaces1Number of PROFINET interfaces0Number of PROFINET interfaces1Number of PROFINET		6 wk; At 40 °C ambient temperature
• Behavior of the clock following POWER-ON Clock continues running after POWER OFF • Behavior of the clock following expiry of backup pride Clock continues to run with the time at which the power failure occurred Operating hours counter 4 • Number 1 • 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 Yes • to MPI, slave Yes • in AS, master Yes • in AS, slave Yes Digital inputs 0 Number of digital inputs 0 Digital outputs 0 Analog inputs 0 Number of analog inputs 0 Number of analog outputs 0 Number of PROFINET interfaces 1 Number of PROFINET interfaces 1 Number of PROFINET interfaces 0 Interface 1 Interfaces 1 Number of PROFINET interfaces 1 Number of PROFINET interfaces 1 <		
• Behavior of the clock following expiry of backup period Clock continues to run with the time at which the power failure occurred • Number • Number • Number 4 • Number/Number range 0 to 3 • Range of values 0 to 2 • Granularity 1 h • retentive Yes; Must be restarted at each restart Clock synchronization Ves • to MPI, master Yes • to MPI, slave Yes • in AS, master Yes • in AS, slave Yes Digital inputs 0 Number of digital outputs 0 Number of analog inputs 0 Number of nalog inputs 0 Number of industrial Ethernet interfaces 1 Number of industrial Ethernet interfaces 1 Number of IPCPINET interfaces 1 Number of PRS 425 interfaces 1 Number of PRS 425 interfaces 1 Number of PRS 425 interfaces 1		
period occurred Operating hours counter 4 • 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 • to MPI, naster Yes • to MPI, slave Yes • in AS, master Yes • in AS, slave Yes Digital inputs 0 Number of digital inputs 0 Digital outputs 0 Analog inputs 0 Number of analog inputs 0 Interfaces 1 Number of RS 485 interfaces 1 Number of RS 485 interfaces 0		-
• 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 * • to MPI, master Yes • to MPI, slave Yes • to MPI, slave Yes • in AS, master Yes • in AS, slave Yes Digital inputs 0 Number of digital inputs 0 Number of analog inputs 0 Analog inputs 0 Number of analog outputs 0 Number of analog outputs 0 Number of Ra 485 interfaces 1 Number of RS 482 interfaces 0 Number of RS 482 interfaces 0 Number of RS 482 interfaces 1 Number of RS 482 interfaces 1 Number of RS 482 interfaces 0		
Number Number range0 to 3• Range of values0 to 2^31 hours (when using SFC 101)• Granularity1 h• retentiveYes; Must be restarted at each restartClock synchronizationYes• supportedYes• to MPI, masterYes• to MPI, slaveYes• in AS, masterYes• in AS, slaveYesDigital inputs0Analog inputsNumber of digital outputsNumber of digital outputs0Analog inputs0Analog outputs0Number of industrial Ethernet interfaces1Number of RS 485 interfaces1Number of RS 485 interfaces1Number of RS 485 interfaces01. Interface0	Operating hours counter	
• Range of values0 to 2^31 hours (when using SFC 101)• Granularity1 h• retentiveYes; Must be restarted at each restartClock synchronizationYes• supportedYes• to MPI, masterYes• to MPI, slaveYes• in AS, masterYes• in AS, slaveYesDigital inputs0Number of digital outputs0Analog inputs0Analog outputs0Number of analog inputs0Interfaces1Number of RS 485 interfaces1Number of RS 485 interfaces1Number of RS 422 interfaces01. Interface0	Number	4
• Granularity1 h• retentiveYes; Must be restarted at each restartClock synchronization• supportedYes• to MPI, masterYes• to MPI, slaveYes• in AS, masterYes• in AS, slaveYesDigital inputs0Digital outputs0Number of digital outputs0Number of analog inputs0Analog outputs0Number of analog outputs0Number of R S 485 interfaces1Number of R S 422 interfaces1Number of R S 422 interfaces011. Interface11. Interface	Number/Number range	0 to 3
• retentive Yes; Must be restarted at each restart • retentive Yes; Must be restarted at each restart • Supported Yes • to MPI, master Yes • to MPI, slave Yes • in AS, master Yes • in AS, slave Yes Digital inputs 0 Number of digital inputs 0 Digital outputs 0 Number of analog inputs 0 Analog outputs 0 Number of analog outputs 0 Number of analog outputs 1 Number of Rades 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 1 Number of RS 422 interfaces 0 1. Interface 1	Range of values	0 to 2^31 hours (when using SFC 101)
Clock synchronization • supported Yes • to MPI, master Yes • to MPI, slave Yes • in AS, master Yes • in AS, slave Yes Digital inputs 0 Number of digital outputs 0 Analog inputs 0 Number of analog inputs 0 Analog outputs 0 Number of analog outputs 0 Number of industrial Ethernet interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 1	• Granularity	1 h
• supported Yes • to MPI, master Yes • to MPI, slave Yes • in AS, master Yes • in AS, slave Yes Digital inputs 0 Digital outputs 0 Number of digital outputs 0 Analog inputs 0 Number of analog inputs 0 Analog outputs 0 Number of industrial Ethernet interfaces 1 Number of industrial Ethernet interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 1	• retentive	Yes; Must be restarted at each restart
CorportYes• to MPI, masterYes• to MPI, slaveYes• in AS, masterYes• in AS, slaveYesDigital inputsNumber of digital inputs0Digital outputsNumber of digital outputs0Analog inputs0Analog inputs0Number of analog inputs0Analog outputs0Number of analog outputs0Number of analog outputs0Number of analog outputs0Number of R S 485 interfaces1Number of RS 422 interfaces1Number of RS 422 interfaces01. Interface1	Clock synchronization	
• to MPI, slave Yes • in AS, master Yes • in AS, slave Yes Digital inputs 0 Number of digital inputs 0 Digital outputs 0 Number of digital outputs 0 Analog inputs 0 Number of analog inputs 0 Analog outputs 0 Number of analog outputs 0 Number of industrial Ethernet interfaces 1 Number of RS 485 interfaces 1 Number of RS 485 interfaces 0 1. Interface 0	• supported	Yes
• in AS, master Yes • in AS, master Yes • in AS, slave Yes Digital inputs 0 Number of digital inputs 0 Digital outputs 0 Number of digital outputs 0 Analog inputs 0 Number of analog inputs 0 Number of analog outputs 0 Number of analog outputs 0 Number of analog outputs 1 Number of industrial Ethernet interfaces 1 Number of RS 485 interfaces 1 Number of RS 485 interfaces 0 1. Interface 0	• to MPI, master	Yes
• in AS, slaveYesDigital inputs0Number of digital inputs0Digital outputs0Number of digital outputs0Analog inputs0Analog outputs0Number of analog outputs0Number of analog outputs0Interfaces1Number of RS 485 interfaces1Number of RS 422 interfaces01. Interface	• to MPI, slave	Yes
Digital inputs 0 Digital outputs 0 Number of digital outputs 0 Analog inputs 0 Number of analog inputs 0 Analog outputs 0 Number of analog outputs 0 Interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0	• in AS, master	Yes
Number of digital inputs 0 Digital outputs 0 Number of digital outputs 0 Analog inputs 0 Number of analog inputs 0 Analog outputs 0 Number of analog outputs 0 Interfaces 1 Number of PROFINET interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 0	● in AS, slave	Yes
Number of digital inputs 0 Digital outputs 0 Number of digital outputs 0 Analog inputs 0 Number of analog inputs 0 Analog outputs 0 Number of analog outputs 0 Interfaces 1 Number of PROFINET interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 0	Digital inputs	
Number of digital outputs 0 Analog inputs 0 Number of analog inputs 0 Analog outputs 0 Number of analog outputs 0 Interfaces 1 Number of PROFINET interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 1		0
Number of digital outputs 0 Analog inputs 0 Number of analog inputs 0 Analog outputs 0 Number of analog outputs 0 Interfaces 1 Number of PROFINET interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 1		
Analog inputs 0 Number of analog inputs 0 Analog outputs 0 Number of analog outputs 0 Interfaces 1 Number of industrial Ethernet interfaces 1 Number of PROFINET interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 0		0
Number of analog inputs 0 Analog outputs 0 Number of analog outputs 0 Interfaces 1 Number of industrial Ethernet interfaces 1 Number of PROFINET interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 1		
Analog outputs 0 Number of analog outputs 0 Interfaces 1 Number of industrial Ethernet interfaces 1 Number of PROFINET interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 0		0
Number of analog outputs 0 Interfaces 1 Number of industrial Ethernet interfaces 1 Number of PROFINET interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 1		0
Interfaces Number of industrial Ethernet interfaces 1 Number of PROFINET interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 1	Analog outputs	
Number of industrial Ethernet interfaces 1 Number of PROFINET interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 1	Number of analog outputs	0
Number of industrial Ethernet interfaces 1 Number of PROFINET interfaces 1 Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 1	Interfaces	
Number of RS 485 interfaces 1 Number of RS 422 interfaces 0 1. Interface 1		1
Number of RS 422 interfaces 0 1. Interface 0	Number of PROFINET interfaces	1
1. Interface	Number of RS 485 interfaces	1
	Number of RS 422 interfaces	0
	1. Interface	
		Integrated RS 485 interface

Physics	RS 485
Isolated	Yes
Power supply to interface (15 to 30 V DC), max.	200 mA
Protocols	
● MPI	Yes
 PROFIBUS DP master 	Yes
 PROFIBUS DP slave 	Yes
 Point-to-point connection 	No
MPI	
 Transmission rate, max. 	12 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
— Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes
— S7 communication, as client	No; but via CP and loadable FB
— S7 communication, as server	Yes
PROFIBUS DP master	
 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	Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO
	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 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
	244 byte
— Outputs, max. PROFIBUS DP slave	244 0916
Transmission rate, max.	12 Mbit/s
automatic baud rate search	Yes; only with passive interface
	32
Address area, max.	32 byte
 User data per address area, max. Services 	52 byte
	Yes
- PG/OP communication	
- Routing	Yes; Only with active interface
— Global data communication	No
— S7 basic communication	No
— S7 communication	Yes
— S7 communication, as client	No
— S7 communication, as server	Yes; Connection configured on one side only
 — Direct data exchange (slave-to-slave communication) 	Yes
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
	244 byte
— Outputs	244 byte PROFINET
- Outputs 2. Interface	
Outputs 2. Interface Interface type	PROFINET Ethernet RJ45 Yes
Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate	PROFINET Ethernet RJ45
Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate Autonegotiation	PROFINET Ethernet RJ45 Yes Yes; 10/100 Mbit/s Yes
— Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate Autonegotiation Autocrossing	PROFINET Ethernet RJ45 Yes Yes; 10/100 Mbit/s Yes Yes
Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate Autonegotiation Autocrossing Change of IP address at runtime, supported	PROFINET Ethernet RJ45 Yes Yes; 10/100 Mbit/s Yes
Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate Autonegotiation Autocrossing Change of IP address at runtime, supported Interface types	PROFINET Ethernet RJ45 Yes Yes; 10/100 Mbit/s Yes Yes Yes Yes
Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate Autonegotiation Autocrossing Change of IP address at runtime, supported Interface types • Number of ports	PROFINET Ethernet RJ45 Yes Yes; 10/100 Mbit/s Yes Yes Yes Yes
 — Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate Autonegotiation Autocrossing Change of IP address at runtime, supported Interface types Number of ports integrated switch 	PROFINET Ethernet RJ45 Yes Yes; 10/100 Mbit/s Yes Yes Yes Yes
Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate Autonegotiation Autocrossing Change of IP address at runtime, supported Interface types • Number of ports • integrated switch Protocols	PROFINET Ethernet RJ45 Yes Yes; 10/100 Mbit/s Yes Yes Yes Z Yes
Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate Autonegotiation Autocrossing Change of IP address at runtime, supported Interface types • Number of ports • integrated switch Protocols • MPI	PROFINET Ethernet RJ45 Yes Yes; 10/100 Mbit/s Yes Yes Yes Yes Yes No
Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate Autonegotiation Autocrossing Change of IP address at runtime, supported Interface types • Number of ports • integrated switch Protocols • MPI • PROFINET IO Controller	PROFINET Ethernet RJ45 Yes Yes; 10/100 Mbit/s Yes Yes Yes Yes Yes No No Yes; Also simultaneously with IO-Device functionality
Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate Autonegotiation Autocrossing Change of IP address at runtime, supported Interface types • Number of ports • integrated switch Protocols • MPI	PROFINET Ethernet RJ45 Yes Yes; 10/100 Mbit/s Yes Yes Yes Yes Yes No No Yes; Also simultaneously with IO-Device functionality Yes; Also simultaneously with IO Controller functionality
Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate Autonegotiation Autocrossing Change of IP address at runtime, supported Interface types • Number of ports • integrated switch Protocols • MPI • PROFINET IO Controller	PROFINET Ethernet RJ45 Yes Yes; 10/100 Mbit/s Yes Yes Yes Yes No Yes; Also simultaneously with IO-Device functionality Yes; Also simultaneously with IO Controller functionality Yes; Also simultaneously with IO Controller functionality Yes
Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate Autonegotiation Autocrossing Change of IP address at runtime, supported Interface types • Number of ports • integrated switch Protocols • MPI • PROFINET IO Controller • PROFINET IO Device	PROFINET Ethernet RJ45 Yes Yes; 10/100 Mbit/s Yes Yes Yes Yes Yes No No Yes; Also simultaneously with IO-Device functionality Yes; Also simultaneously with IO Controller functionality
Outputs 2. Interface Interface type Physics Isolated automatic detection of transmission rate Autonegotiation Autocrossing Change of IP address at runtime, supported Interface types • Number of ports • integrated switch Protocols • MPI • PROFINET IO Controller • PROFINET IO Device • PROFINET CBA	PROFINET Ethernet RJ45 Yes Yes; 10/100 Mbit/s Yes Yes Yes Yes No Yes; Also simultaneously with IO-Device functionality Yes; Also simultaneously with IO Controller functionality Yes; Also simultaneously with IO Controller functionality Yes

• 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. number of instances: 32
— Isochronous mode	Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO
— Open IE communication	Yes; Via TCP/IP, ISO on TCP, and UDP
— IRT	Yes
— Shared device	Yes
— Prioritized startup	Yes
 — Number of IO devices with prioritized startup, max. 	32
— Number of connectable IO Devices, max.	128
— Of which IO devices with IRT, max.	64
— of which in line, max.	64
 — Number of IO Devices with IRT and the option "high 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	
— Inputs, max.	8 kbyte
— Outputs, max.	8 kbyte
— User data consistency, max.	1 024 byte
PROFINET IO Device	
Services	

	N/
— 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. 	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	
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, 	Yes
supported	165
	Yes; via integrated PROFINET interface and loadable FBs
supported	
supported • ISO-on-TCP (RFC1006)	Yes; via integrated PROFINET interface and loadable FBs
 supported ISO-on-TCP (RFC1006) — Number of connections, max. 	Yes; via integrated PROFINET interface and loadable FBs
supported • ISO-on-TCP (RFC1006) — Number of connections, max. — Data length, max.	Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte
 supported ISO-on-TCP (RFC1006) Number of connections, max. Data length, max. UDP 	Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs
 supported ISO-on-TCP (RFC1006) Number of connections, max. Data length, max. UDP Number of connections, max. 	Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 16

• User-defined websites Yes • Number of HTTP clients 5 Media redundancy 200 ms; PROFINET MRP • Number of stations in the ring, max. 50 Isochronous mode 1 Isochronous operation (application synchronized up to terminal) Yes; Via PROFIBUS DP or PROFINET interface Communication functions Yes PG/OP communication Yes Global data communication Yes • supported Yes • Number of GD loops, max. 8 • Number of GD packets, max. 8 • Number of GD packets, receiver, max. 8 • Size of GD packets, receiver, max. 8 • Size of GD packet (of which consistent), max. 22 byte • Size of GD packet (of which consistent), max. 22 byte • Supported Yes • User data per job, max. 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (w • User data per job (of which consistent), max. 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (w	
Media redundancy • Switchover time on line break, typ. 200 ms; PROFINET MRP • Number of stations in the ring, max. 50 Isochronous mode Isochronous operation (application synchronized up to terminal) PG/OP communication Yes; Via PROFIBUS DP or PROFINET interface PG/OP communication Yes Obtat record routing Yes Global data communication Yes • Number of GD loops, max. 8 • Number of GD packets, max. 8 • Number of GD packets, max. 8 • Number of GD packets, max. 8 • Size of GD packets, max. 22 byte Size of GD packet, max. 22 byte Size of GD packet (of which consistent), max. 22 byte S7 basic communication Yes • User data per job, max. 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (w • User data per job (of which consistent), max. 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (w	
 Switchover time on line break, typ. Number of stations in the ring, max. Sochronous mode Isochronous operation (application synchronized up to terminal) Yes; Via PROFIBUS DP or PROFINET interface Communication functions PG/OP communication Yes Global data communication supported Number of GD loops, max. Number of GD packets, max. Number of GD packets, receiver, max. Size of GD packets, receiver, max. Size of GD packets, max. Siz	
 Number of stations in the ring, max. 50 Isochronous mode Isochronous operation (application synchronized up to terminal) Yes; Via PROFIBUS DP or PROFINET interface Communication functions PG/OP communication Yes Data record routing Yes Global data communication supported Number of GD loops, max. Number of GD packets, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packets, max. Size of GD packet (of which consistent), max. Size of GD packet (of which consistent), max. S7 basic communication Yes User data per job, max. User data per job (of which consistent), max. Yes (byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server) 	
Isochronous mode Isochronous operation (application synchronized up to terminal) Yes; Via PROFIBUS DP or PROFINET interface Communication functions Yes PG/OP communication Yes Global data communication Yes • supported Yes • Number of GD loops, max. 8 • Number of GD packets, max. 8 • Number of GD packets, receiver, max. 8 • Size of GD packets, receiver, max. 8 • Size of GD packet (of which consistent), max. 22 byte S7 basic communication Yes • User data per job, max. 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (w X_PUT or X_GET as server)	
Isochronous operation (application synchronized up to terminal) Yes; Via PROFIBUS DP or PROFINET interface Communication functions Yes Data record routing Yes Global data communication Yes • 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 Yes • User data per job, max. 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (w	
to terminal) Communication functions PG/OP communication Data record routing Global data communication • supported • Number of GD loops, max. • Number of GD packets, max. • Number of GD packets, transmitter, max. • Number of GD packets, receiver, max. • Size of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packets, max. • Size of GD packet, (of which consistent), max. • State communication • supported • User data per job, max. • User data per job (of which consistent), max. • User data per job (of which consistent), max. • User data per job (of which consistent), max. • State communication • Supported • User data per job (of which consistent), max. • User data per job (of which consistent), max. • User data per job (of which consistent), max. • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Communication • Supported • User data per job (of which consistent), max. • Commu	
Communication functions PG/OP communication Yes Data record routing Yes Global data communication Yes • 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, receiver, max. 8 • Size of GD packet (of which consistent), max. 22 byte S7 basic communication 22 byte • User data per job, max. 76 byte • User data per job (of which consistent), max. 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)	
PG/OP communication Yes Data record routing Yes Global data communication Yes • 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 • Number of GD packets, receiver, max. 8 • Size of GD packets, max. 22 byte S7 basic communication 22 byte S7 basic communication Yes • User data per job, max. 76 byte • User data per job (of which consistent), max. 76 bytes (with X_SEND or X_RCV); 64 bytes (w	_
Data record routingYesGlobal data communicationYes• supportedYes• 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• Start of GD packet (of which consistent), max.22 byte• SupportedYes• User data per job, max.76 byte• User data per job (of which consistent), max.76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)	
Global data communication Yes • 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, transmitter, max. 8 • Number of GD packets, receiver, max. 8 • Size of GD packets, max. 22 byte • Size of GD packet (of which consistent), max. 22 byte S7 basic communication 22 byte • User data per job, max. 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)	
• supportedYes• 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, receiver, max.22 byte• Size of GD packet, max.22 byte• Size of GD packet (of which consistent), max.22 byte• SupportedYes• SupportedYes• User data per job, max.76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)	
 Number of GD loops, max. Number of GD packets, max. Number of GD packets, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packets, max. Size of GD packet (of which consistent), max. S7 basic communication Stable data per job, max. User data per job (of which consistent), max. Yes T6 byte: T76 byte: T76 byte: T6 byte: T76 byte:	
 Number of GD packets, max. Number of GD packets, transmitter, max. Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. S7 basic communication S7 basic communication Ves User data per job, max. User data per job (of which consistent), max. T6 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server) 	
 Number of GD packets, transmitter, max. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. S7 basic communication Supported User data per job, max. User data per job (of which consistent), max. Yes Yes User data per job (of which consistent), max. Step of byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server) 	
 Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. Size of GD packet (of which consistent), max. S7 basic communication Supported User data per job, max. User data per job (of which consistent), max. Yes User data per job (of which consistent), max. Yes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server) 	
 Size of GD packets, max. Size of GD packet (of which consistent), max. Size of GD packet (of which consistent), max. S7 basic communication Supported User data per job, max. User data per job (of which consistent), max. Yes Yes Yes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server) 	
 Size of GD packet (of which consistent), max. S7 basic communication supported User data per job, max. User data per job (of which consistent), max. Yes 76 byte 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server) 	
S7 basic communication Yes • supported Yes • User data per job, max. 76 byte • User data per job (of which consistent), max. 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server)	
 supported User data per job, max. User data per job (of which consistent), max. Yes 76 byte 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or X_GET as server) 	
 User data per job, max. User data per job (of which consistent), max. T6 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (w X_PUT or X_GET as server) 	
• User data per job (of which consistent), max. 76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (w X_PUT or X_GET as server)	
X_PUT or X_GET as server)	
S7 communication	<i>v</i> ith
or contraction	
• supported Yes	
• as server Yes	
as client Yes; via integrated PROFINET interface and loadable FI CP and loadable FB	B or via
• User data per job, max. See online help of STEP 7 (shared parameters of the SF and of the SFCs/FCs of S7 Communication)	-Bs/FBs
S5 compatible communication	
• supported Yes; via CP and loadable FC	
PROFINET CBA (at set setpoint communication load)	
• Setpoint for the CPU communication load 50 %	
Number of remote interconnection partners 32	
Number of functions, master/slave 30	
• Total of all master/slave connections 1 000	
• Data length of all incoming connections 4 000 byte master/slave, max.	
Data length of all outgoing connections asser/slave, max.	

Number of device-internal and PROFIBUS	500
 Interconnections Data length of device-internal und PROFIBUS 	4 000 byte
interconnections, max.	1 400 byte
Data length per connection, max.	1 400 byte
Remote interconnections with acyclic transmission	F00
— Sampling frequency: Sampling time, 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
Remote interconnections with cyclic transmission	
 Transmission frequency: Transmission interval, min. 	10 ms
 Number of incoming interconnections 	200
 Number of outgoing interconnections 	200
 — Data length of all incoming interconnections, max. 	2 000 byte
 — Data length of all outgoing interconnections, max. 	2 000 byte
— Data 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	200
— Data length of all HMI variables, max.	2 000 byte
PROFIBUS proxy functionality	
— supported	Yes
— Number of linked PROFIBUS devices	16
— 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, 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. 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
— 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	

• 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	40 mm
Height	125 mm
Depth	130 mm
Weights	
Weight, approx.	340 g
last modified:	09/25/2019