SIEMENS

Data sheet

6ES7317-7TK10-0AB0



SIMATIC S7-300, CPU 317T-3 PN/DP, Central processing unit for PLC and technology tasks, 1024 KB work memory, 1st interface MPI/DP 12 Mbit/s, 2nd interface DP (drive), 3rd interface Ethernet PROFINET with 2-port switch, Integr. I/O for technology, Front connector (1x 40-pole) and Micro Memory Card min. 8 MB required

General information	
HW functional status	01
Firmware version	CPU: V3.2; integrated technology V4.1.5
Product function	
Isochronous mode	Yes; Via PROFIBUS DP or PROFINET interface
Engineering with	
 Programming package 	STEP 7 V5.5 SP2 or higher and S7-Technology option package V4.2 SP3
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.
Load voltage L+	
 Rated value (DC) 	24 V
 Reverse polarity protection 	Yes
Digital outputs	
— Rated value (DC)	24 V; 2L+
 Reverse polarity protection 	No; 2L+
Input current	
Current consumption (rated value)	1 050 mA
Current consumption (in no-load operation), typ.	230 mA
Inrush current, typ.	6.5 A
² t	1 A ² ·s
Power loss	
Power loss, typ.	7.5 W
Memory	
Work memory	
 integrated 	1 024 kbyte
expandable	No
Load memory	
• Plug-in (MMC)	Yes
 Plug-in (MMC), max. 	8 Mbyte
 Data management on MMC (after last programming), min. 	10 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	
• Number, max.	see instruction list
• 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 4: OB 32, 33, 34, 35
Number of cyclic interrupt OBs Number of process alarm OBs	4; OB 32, 33, 34, 35 1; OB 40
 Number of process alarm OBs Number of DPV1 alarm OBs 	
Number of DPV Talarm OBS Number of isochronous mode OBs	3; OB 55, 56, 57 1; OB 61 - isochronous mode is possible either on DP or PROFINET IO
	(not simultaneously)
 Number of technology synchronous alarm OBs 	1; OB 65
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	
Number	512
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	511
— preset	Z 0 to Z 7
Counting range	N/
— adjustable	Yes
— lower limit	0
— upper limit	999
IEC counter	Ver
• present	Yes SFB
• Type • Number	
• Number S7 times	Unlimited (limited only by RAM capacity)
Number	512
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	511
— preset	No retentivity
Time range	
— lower limit	10 ms

— upper limit	9 990 s
IEC timer	
• present	Yes
•	SFB
• Type • Number	
	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
Retentive data area (incl. timers, counters, flags), max.	256 kbyte
Flag	
• Size, max.	4 096 byte
Retentivity available	Yes; From MB 0 to MB 4 095
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 	256 byte
 Outputs, default 	256 byte
Default addresses of the integrated channels	
— Digital inputs	66
— Digital outputs	66
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	256
Outputs	65 536
— of which central	256
Analog channels	4.000
• Inputs	4 096
— of which central	64
Outputs	4 096
— of which central	64
Hardware configuration	
Number of expansion units, max.	0
Number of DP masters	
 integrated 	2; 1 DP and 1 DP (drive)
• via CP	2; for DP
Number of operable FMs and CPs (recommended)	
• FM	8
• CP, PtP	8
• CP, LAN	8
Rack	
 Racks, max. 	1
 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; Тур.: 2 s
 Behavior of the clock following POWER-ON 	Clock continues running after POWER OFF
 Behavior of the clock following expiry of backup pariod 	the clock continues at the time of day it had when power was switched off
Operating hours counter	011
Number	4
Number/Number range	0 to 3
Range of values	0 to 2 ³ 1 hours (when using SFC 101)
-	1 h
 Granularity retentive 	Yes; Must be restarted at each restart
Clock synchronization	
supported	Yes
• to MPI, master	Yes
	Yes
• to MPI, slave	
• to DP, master	Yes Ves: Only time of day slave
• to DP, slave	Yes; Only time-of-day slave
• in AS, master	Yes
• in AS, slave	Yes Voc As diant
on Ethernet via NTP	Yes; As client
Digital inputs	
Number of digital inputs	4
of which inputs usable for technological functions	4
Input characteristic curve in accordance with IEC 61131, type 1	Yes
Number of simultaneously controllable inputs	
horizontal installation	
— up to 40 °C, max.	4
— up to 60 °C, max.	4
vertical installation	
— up to 40 °C, max.	4
Input voltage	
 Rated value (DC) 	24 V
• for signal "0"	-3 to +5V
• for signal "1"	+15 to +30 V
Input current	
• for signal "1", typ.	7 mA
Input delay (for rated value of input voltage)	
for technological functions	
— at "0" to "1", max.	10 μs; Typical
— at "1" to "0", max.	10 μs; Typical
Cable length	
 shielded, max. 	1 000 m
Digital outputs	
Number of digital outputs	8
 of which high-speed outputs 	8
Functions	for technology functions, e.g. high-speed cam switch signals
Short-circuit protection	Yes
Response threshold, typ.	1 A
Limitation of inductive shutdown voltage to	48 V
Controlling a digital input	No
Switching capacity of the outputs	
 on lamp load, max. 	5 W
Load resistance range	
lower limit	48 Ω
upper limit	4 kΩ
Output voltage	

● for signal "0", max.	3 V; (2L+)
 for signal "1", min. 	Rated voltage -2.5 V
Output current	Naled Vollage -2.5 V
for signal "1" rated value	0.5 A
 for signal "1" permissible range for 0 to 60 °C, min. 	5 mA
 for signal "1" permissible range for 0 to 60 °C, max. 	0.6 A
 for signal "0" residual current, max. 	0.3 mA
Parallel switching of two outputs	0.5 IIIA
for uprating	No
 for redundant control of a load 	No
Switching frequency	NO
with resistive load, max.	100 Hz
with inductive load, max.	
 on lamp load, max. 	0.2 Hz; According to IEC 60947-5-1, DC-13 100 Hz
	100 HZ
Total current of the outputs (per group) horizontal installation	
	4 A
— up to 40 °C, max.	
— up to 60 °C, max.	3 A
all other mounting positions	4.4
— up to 40 °C, max.	4 A
Integrated high-speed cams	70
Switching accuracy (+/-)	70 µs
Cable length	
 shielded, max. 	1 000 m
Analog inputs	
Number of analog inputs	0
Analog outputs	
Number of analog outputs	0
Encoder	
Connectable encoders	
• 2-wire sensor	No
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
leolated	
Isolated	Yes
Interface types	Yes
Interface types • RS 485	Yes
Interface types • RS 485 • Output current of the interface, max.	Yes
Interface types • RS 485 • Output current of the interface, max. Protocols	Yes Yes 200 mA
Interface types • RS 485 • Output current of the interface, max. Protocols • MPI	Yes Yes 200 mA Yes
Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master	Yes Yes 200 mA Yes Yes
Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave	Yes Yes 200 mA Yes Yes Yes
Interface types • RS 485 • Output current of the interface, max. Protocols • MPI • PROFIBUS DP master • PROFIBUS DP slave • Point-to-point connection	Yes Yes 200 mA Yes Yes
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 200 mA Yes Yes Yes No
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.	Yes Yes 200 mA Yes Yes Yes
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 200 mA Yes Yes Yes No 12 Mbit/s
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 200 mA Yes Yes Yes No 12 Mbit/s
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 200 mA Yes Yes Yes No 12 Mbit/s Yes Yes
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 200 mA Yes Yes Yes No 12 Mbit/s Yes Yes Yes
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 200 mA Yes Yes Yes No 12 Mbit/s Yes Yes Yes Yes
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 200 mA Yes Yes Yes No 12 Mbit/s Yes Yes Yes Yes Yes Yes
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	Yes Yes 200 mA Yes Yes Yes No 12 Mbit/s Yes Yes Yes Yes Yes Yes Yes Yes Yes No; but via CP and loadable FB
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 200 mA Yes Yes Yes No 12 Mbit/s Yes Yes Yes Yes Yes Yes
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	Yes Yes 200 mA Yes Yes Yes No 12 Mbit/s Yes Yes Yes Yes Yes Yes Yes Yes Yes No; but via CP and loadable FB

 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
— 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
PROFIBUS DP slave	
Transmission rate, max.	12 Mbit/s
 automatic baud rate search 	Yes; only with passive interface
 Address area, max. 	32
 User data per address area, max. 	32 byte
Services	
— PG/OP communication	Yes
— Routing	Yes; Only with active interface
— Global data communication	No
— S7 basic communication	No
- S7 communication	Yes
- S7 communication, as client	No
- S7 communication, as server	Yes; Connection configured on one side only
— Direct data exchange (slave-to-slave	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
 Output current of the interface, max. 	200 mA
Protocols	
MPI	No
PROFIBUS DP master	Yes; DP(DRIVE)-Master
PROFIBUS DF Inaster PROFIBUS DF slave	No
Point-to-point connection	No
ProfileUS DP master	
	12 Mbit/c
Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	64
Services	No
— PG/OP communication	No
— Routing	No

 Global data communication 	No
 — S7 basic communication 	No
— S7 communication	No
— Equidistance	Yes
— Isochronous mode	Yes
— SYNC/FREEZE	No
 Activation/deactivation of DP slaves 	Yes
— DPV1	No
Address area	
— Inputs, max.	1 024 byte
— Outputs, max.	1 024 byte
User data per DP slave	
— Inputs, max.	244 byte
— Outputs, max.	244 byte
PROFIBUS DP slave	
• GSD file	http://gupport.gutomation.giomana.gom in Draduat Support.groa
	http://support.automation.siemens.com in Product Support area
Transmission rate, max.	12 Mbit/s
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	
	Voo
• RJ 45 (Ethernet)	Yes
Number of ports	2
integrated switch	Yes
Protocols	
• MPI	No
 PROFINET IO Controller 	Yes; Also simultaneously with IO-Device functionality
 PROFINET IO Device 	Yes; Also simultaneously with IO Controller functionality
PROFIBUS DP master	No
PROFIBUS DP slave	No
Open IE communication	Yes; Via TCP/IP, ISO on TCP, and UDP
	Yes
Web server	
Media redundancy	Yes
PROFINET IO Controller	
Transmission rate, max.	100 Mbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
— S7 communication	Yes; with loadable FBs, max. configurable connections: 16, max. number of instances: 32
— Isochronous mode	Yes; OB 61; isochronous mode can only be used alternatively on PROFIBUS DP or PROFINET IO
— 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 connectable IO Devices for RT,	128
max.	
— of which in line, max.	128
- Activation/deactivation of IO Devices	Yes
 Number of IO Devices that can be simultaneously activated/deactivated, max. 	8
-	Vac
 — 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 μs, 500 μs, 1 ms, 2 ms, 4 ms
— 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 PROFIenergy standard FB for I-Device
— Shared device	Yes
 — Number of IO Controllers with shared device, max. 	2
Transfer memory	
— Inputs, max.	1 440 byte; Per IO Controller with shared device
— Outputs, max.	1 440 byte; Per IO Controller with shared device
Submodules	
— Number, max.	64
— User data per submodule, max.	1 024 byte
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 	65532, 65533, 65534, 65535 Yes
Keep-alive function, supported Protocols	
Protocols	Yes
Protocols PROFIsafe Redundancy mode	Yes
Protocols PROFIsafe Redundancy mode Media redundancy	Yes
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ.	Yes
Protocols PROFIsafe Redundancy mode Media redundancy	Yes No 200 ms; PROFINET MRP
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max.	Yes No 200 ms; PROFINET MRP 50
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP	Yes No 200 ms; PROFINET MRP
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max.	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max.	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connection type 11H, max. — several passive connections per port,	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connection type 11H, max. — several passive connections per port, supported	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connections per port, supported • ISO-on-TCP (RFC1006)	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connections per port, supported • ISO-on-TCP (RFC1006) — Number of connections, max.	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 16
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connections per port, supported • ISO-on-TCP (RFC1006) — Number of connections, max. — Data length, max. • UDP	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes Yes via integrated PROFINET interface and loadable FBs 16 32 768 byte
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connections per port, supported • ISO-on-TCP (RFC1006) — Number of connections, max. — Data length, max.	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connection type 11H, max. — several passive connections per port, supported • ISO-on-TCP (RFC1006) — Number of connections, max. — Data length, max. • UDP — Number of connections, max.	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 16
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connection type 11H, max. — Data length for connections per port, supported • ISO-on-TCP (RFC1006) — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max.	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 16
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connection type 11H, max. — several passive connections per port, supported • ISO-on-TCP (RFC1006) — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • Web server	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 16 1472 byte
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connections per port, supported • ISO-on-TCP (RFC1006) — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max.	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 16 1 472 byte Yes
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connection type 11H, max. — Data length for connections per port, supported • ISO-on-TCP (RFC1006) — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. Web server • supported • User-defined websites • Number of HTTP clients	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 16 1 472 byte Yes
Protocols PROFIsafe Redundancy mode Media redundancy - Switchover time on line break, typ. - Number of stations in the ring, max. Open IE communication • TCP/IP - Number of connections, max. - Data length for connection type 01H, max. - Data length for connections per port, supported • ISO-on-TCP (RFC1006) - Number of connections, max. - Data length, max. • UDP - Number of connections, max. - Data length, max. • UDP - Number of connections, max. - Data length, max. • UDP - Number of connections, max. - Data length, max. • UDP - Number of connections, max. - Data length, max. Web server • supported • User-defined websites • Number of HTTP clients communication functions / header	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 16 1 472 byte Yes Yes 5
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connection type 11H, max. — Data length for connections per port, supported • ISO-on-TCP (RFC1006) — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. Web server • supported • User-defined websites • Number of HTTP clients communication functions / header PG/OP communication	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 16 1 472 byte Yes Yes Yes
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connection type 11H, max. — Data length for connections per port, supported • ISO-on-TCP (RFC1006) — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. Web server • supported • User-defined websites • Number of HTTP clients communication Data record routing	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 16 1 472 byte Yes Yes 5
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication • TCP/IP — Number of connections, max. — Data length for connection type 01H, max. — Data length for connection type 11H, max. — Data length for connections per port, supported • ISO-on-TCP (RFC1006) — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. Web server • supported • User-defined websites • Number of HTTP clients communication functions / header PG/OP communication	Yes No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 16 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 16 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 16 1 472 byte Yes Yes Yes

Number of GD loops, max.	8
 Number of GD packets, max. 	8
 Number of GD packets, transmitter, max. 	8
 Number of GD packets, receiver, max. 	8
 Size of GD packets, max. 	22 byte
 Size of GD packet (of which consistent), max. 	22 byte
S7 basic communication	
 supported 	Yes
 User data per job, max. 	76 byte
 User data per job (of which consistent), max. 	76 byte; 76 bytes (with X_SEND or X_RCV); 64 bytes (with X_PUT or
	X_GET as server)
S7 communication	
 supported 	Yes
• as server	Yes
• as client	Yes; via integrated PROFINET interface and loadable FB or via CP and
	loadable FB
 User data per job, max. 	See online help of STEP 7 (shared parameters of the SFBs/FBs and of the SFCs/FCs of S7 Communication)
S5 compatible communication	
supported	Yes; via CP and loadable FC
Number of connections	
overall	32
usable for PG communication	31
usable for PG communication — 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
0	(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; without continuation
Status/control	
Status/control variable	Yes
Variables	Inputs, outputs, memory bits, DB, times, counters
	30
Number of variables, max.	
— of which status variables, max.	30
— of which control variables, max.	14
Forcing	N
• Forcing	Yes
Forcing, variables	Inputs, outputs
Number of variables, max.	10
Diagnostic buffer	

	N/
• 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
Interrupts/diagnostics/status information	
Alarms	No
Diagnostics function	No
Diagnostics indication LED	
 Status indicator digital input (green) 	Yes
 Status indicator digital output (green) 	Yes
Potential separation	
Potential separation digital inputs	
 between the channels and backplane bus 	Yes
Potential separation digital outputs	
 between the channels and backplane bus 	Yes
Isolation	
Isolation tested with	500 V DC
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	60 °C
configuration / header	
Configuration software	Yes: STEP 7 V5.5 SP2 or higher and S7-Technology option package
	Yes; STEP 7 V5.5 SP2 or higher and S7-Technology option package V4.2 SP3
Configuration software	
Configuration software • STEP 7	
Configuration software • STEP 7 configuration / programming / header	V4.2 SP3
Configuration software • STEP 7 configuration / programming / header • Command set	V4.2 SP3 see instruction list
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels	V4.2 SP3 see instruction list 8
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC)	V4.2 SP3 see instruction list 8 see instruction list
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB)	V4.2 SP3 see instruction list 8 see instruction list
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language	V4.2 SP3 see instruction list 8 see instruction list see instruction list
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language — LAD	V4.2 SP3 see instruction list 8 see instruction list see instruction list Yes
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language — LAD — FBD	V4.2 SP3 see instruction list 8 see instruction list see instruction list Yes Yes
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language — LAD — FBD — STL	V4.2 SP3 see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language — LAD — FBD — STL — SCL	V4.2 SP3 see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language LAD FBD STL SCL CFC	V4.2 SP3 see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes Yes
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language — LAD — FBD — STL — SCL — CFC — GRAPH	V4.2 SP3 see instruction list 8 see instruction list see instruction list Yes
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language LAD FBD STL SCL CFC GRAPH HiGraph®	V4.2 SP3 see instruction list 8 see instruction list see instruction list Yes
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language LAD FBD STL SCL CFC GRAPH HiGraph® Know-how protection	V4.2 SP3 see instruction list 8 see instruction list see instruction list Yes
Configuration software STEP 7 configuration / programming / header Command set Nesting levels System functions (SFC) System function blocks (SFB) Programming language LAD FBD STL SCL CFC GRAPH HiGraph® Know-how protection User program protection/password protection	V4.2 SP3 see instruction list 8 see instruction list see instruction list Yes
Configuration software STEP 7 configuration / programming / header Command set Nesting levels System functions (SFC) System function blocks (SFB) Programming language LAD FBD STL SCL CFC GRAPH HiGraph® Know-how protection Block encryption	V4.2 SP3 see instruction list 8 see instruction list see instruction list Yes
Configuration software STEP 7 configuration / programming / header Command set Nesting levels System functions (SFC) System function blocks (SFB) Programming language LAD FBD STL SCL CFC GRAPH HiGraph® Know-how protection Block encryption	V4.2 SP3 see instruction list 8 see instruction list see instruction list Yes
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - CFC - GRAPH - HiGraph® Know-how protection • User program protection/password protection • Block encryption Dimensions Width	V4.2 SP3 see instruction list 8 see instruction list see instruction list Yes
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - CFC - GRAPH - HiGraph® Know-how protection • Block encryption Dimensions Width Height Depth	V4.2 SP3 see instruction list 8 see instruction list 9 Yes
Configuration software STEP 7 configuration / programming / header Command set Nesting levels System functions (SFC) System function blocks (SFB) Programming language LAD FBD STL SCL CFC GRAPH HiGraph® Know-how protection Block encryption Dimensions Width Height Depth Weights	V4.2 SP3 see instruction list 8 see instruction list Yes Yes; With S7 block Privacy 120 mm 125 mm 130 mm
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language - LAD - FBD - STL - SCL - CFC - GRAPH - HiGraph® Know-how protection • Block encryption Dimensions Width Height Depth	V4.2 SP3 see instruction list 8 see instruction list 9 Yes