SIEMENS

Data sheet

6ES7315-7TJ10-0AB0



SIMATIC S7-300, CPU 315T-3 PN/DP, Central processing unit for PLC and technology tasks, 384 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
l²t	1 A ² ·s
Power loss	
Power loss, typ.	7.5 W
Memory	
Work memory	
• integrated	384 kbyte
expandable	No
Load memory	
Plug-in (MMC)	Yes
Plug-in (MMC), max.	8 Mbyte
 Data management on MMC (after last programming), min. 	10 y
Backup	
present	Yes; Guaranteed by MMC (maintenance-free)
without battery	Yes; Program and data

CPU processing times	
for bit operations, typ.	0.05 μs
for word operations, typ.	0.05 µs
for fixed point arithmetic, typ.	0.12 µs
for floating point arithmetic, typ.	0.12 µs
CPU-blocks	υ. το μο
	1.024: (DRs. ECs. ERs.): the maximum number of leadable blocks can
Number of blocks (total)	1 024; (DBs, FCs, FBs); the maximum number of loadable blocks can be reduced by the MMC used.
DB	
Number, max.	1 024; Number range: 1 to 16000
• Size, max.	64 kbyte
FB	
Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
FC	
Number, max.	1 024; Number range: 0 to 7999
• Size, max.	64 kbyte
OB	Section Albert But
Number, max. Size, may.	see instruction list
Size, max. Number of free evels ORs.	64 kbyte
Number of free cycle OBs Number of time clare OBs	1; OB 1
Number of dolay plarm OBs	1; OB 10
Number of delay alarm OBs Number of cyclic interrupt OBs	2; OB 20, 21
Number of process alarm ORs	4; OB 32, 33, 34, 35
 Number of process alarm OBs Number of DPV1 alarm OBs 	1; OB 40
Number of DPV1 alarm OBs Number of isochronous mode OBs	3; OB 55, 56, 57 1; OB 61 - isochronous mode is possible either on DP or PROFINET IO
■ Number of faccinonous mode Obs	(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	256
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	255
— preset	Z 0 to Z 7
Counting range	
— adjustable	Yes
— lower limit	0
— upper limit	999
IEC counter	
present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
S7 times	0.50
• Number	256
Retentivity	V
— adjustable	Yes
lower limit	
— lower limit	0
— upper limit	255
— upper limit — preset	
— upper limit	255

Figure Present Prese	— upper limit	9 990 s
Processor		
Posta erces and their retentivity Retentive data area (incl. timers, counters, flags), max. Plag Size, max. 2 048 byte Steichentivity prosect Retentivity adiable Retentivity adiable Retentivity prosect Retenti		Yes
Number	·	SFB
Referritive data area (incl. timers, counters, flags), max.		Unlimited (limited only by RAM capacity)
Referritive data area (incl. timers, counters, flags), max.	Data areas and their retentivity	
Size, max		128 kbyte
Retentivity available Pestentivity preset Retentivity preset Retentivity preset Retentivity adjustable Pestentivity adjustable Pestentivity adjustable Pestentivity adjustable Pestentivity preset Peste		
Retentivity preset	• Size, max.	2 048 byte
■ Number of clock memories	Retentivity available	Yes; MB 0 to MB 2 047
Data blocks Retentivity adjustable Yes; via non-retain property on DB Retentivity preset Yes	Retentivity preset	MB 0 to MB 15
Retentivity adjustable	 Number of clock memories 	8; 1 memory byte
Retentivity preset	Data blocks	
Local data • per priority class, max. 32 788 byte; Max. 2048 bytes per block	 Retentivity adjustable 	Yes; via non-retain property on DB
	Retentivity preset	Yes
Address area	Local data	
Inputs	• per priority class, max.	32 768 byte; Max. 2048 bytes per block
	Address area	
Outputs of which distributed — Inputs — Outputs — Outputs Outputs, adjustable Outputs, adjustable Outputs, default Outputs Outputs Oefo Outputs Oefo Outputs Oefo Outputs Oefo Outputs Oefo Outputs	I/O address area	
of which distributed Inputs Outputs 2 048 byte 2 048 byte Process image • Inputs Outputs 2 048 byte • Outputs Outputs Outputs Outputs Outputs, adjustable Outputs, default Outputs, default Outputs, default Digital inputs Digital inputs Digital inputs Digital outputs Digital outputs Outputs, default Digital outputs Outputs, default Digital outputs Outputs, default Digital outputs Outputs, default Digital outputs Outputs Digital outputs Outputs Digital outputs Of subprocess images, max It, With PROFINET IO, the length of the user data is limited to 1600 bytes	·	
Inputs	·	2 048 byte
Process image	of which distributed	
Inputs		
		2 048 byte
Outputs, adjustable 2 048 byte Inputs, adjustable 2 048 byte Outputs, adjustable 128 byte Inputs, default 128 byte Outputs, default 128 byte Outputs, default 128 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 16 384 — of which central 256 • Outputs 16 384 — of which central 256 • Outputs 16 384 — of which central 256 • Outputs 16 384 — of which central 464 • Outputs 1024 — of which central 64 • Packs max. 0 Number of expansion units, max. 0 Number of operable FMs and CPs (recommended) • FM 8 • CP, PtP 8 • CP, LAN 8 Rack • Racks, max. 1 • Modules per rack, max. 8		
Outputs, adjustable Inputs, default Outputs, default Outputs, default Outputs, default Default addresses of the integrated channels — Digital inputs — Digital outputs 66 — Digital outputs 66 Subprocess images • Number of subprocess images, max. I; With PROFINET IO, the length of the user data is limited to 1600 bytes Digital channels • Inputs — of which central 256 • Outputs — of which central 256 Analog channels • Inputs — of which central 40 Outputs — of which central 64 • Outputs — of which central 64 Number of expansion units, max. Number of expansion units, max. Inputs • Integrated • Via CP Number of operable FMs and CPs (recommended) • FM • CP, PIP 8 • CP, LAN 8 Rack • Racks, max. • Modules per rack, max. • Modules per rack, max. • Modules per rack, max. • Modules per rack, max. • Modules per rack, max. • Modules per rack, max. • Modules per rack, max. • Modules per rack, max. • Modules per rack, max. • Modules per rack, max. • Modules per rack, max. • Outputs • Packs, max. • Modules per rack, max. • Modules per rack, max. • Macks, max. • Macks, max. • Modules per rack, max. • Macks, max. • Macks, max. • Macks, max. • Modules per rack, max. • Macks, m		
Outputs, default 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		
Default addresses of the integrated channels — Digital inputs — 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 — of which central • Outputs — of which central 64 • Outputs — of paralier of paralier of paralier of DP masters • integrated • via CP Number of DP masters • integrated • via CP Number of operable FMs and CPs (recommended) • FM • CP, PIP 8 • CP, LAN 8 Rack • Racks, max. • Modules per rack, max. 1		
Digital inputs Digital outputs Digital outputs Subprocess images Number of subprocess images, max. Number of subprocess images, max. It, With PROFINET IO, the length of the user data is limited to 1600 bytes Digital channels Inputs Of which central Otuputs Of which central Otwhich central Otuputs Of which central Otuputs Otwhich central Otuputs Otwhich central Otwh	·	128 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 I 6 384 Of which central Outputs I 6 384 Of which central Outputs I 1024 Outputs	• •	
Number of subprocess images, max. 1; With PROFINET IO, the length of the user data is limited to 1600 bytes Digital channels Inputs Outputs Output		66
Digital channels		
Digital channels ■ Inputs	 Number of subprocess images, max. 	
	Digital channels	5,00
- of which central 256 • Outputs 16 384 - of which central 256 Analog channels • Inputs 1024 - of which central 64 • Outputs 1024 - of which central 64 • Outputs 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	-	16 384
Outputs — of which central 256 Analog channels Inputs — of which central Outputs — of which central Outputs — of which central Outputs — of which central Hardware configuration Number of expansion units, max. Number of DP masters integrated via CP Number of operable FMs and CPs (recommended) FM CP, PtP 8 CP, PtP 8 CP, LAN 8 Rack Rack Rack Racks, max. Modules per rack, max. 8		
Analog channels Inputs Outputs Output		
	-	1 024
Outputs — of which central		
Hardware configuration Number of expansion units, max. Number of DP masters integrated via CP Number of operable FMs and CPs (recommended) FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. Modules per rack, max.		
Number of expansion units, max. Number of DP masters integrated via CP 2; 1 DP and 1 DP (drive) 2; for DP Number of operable FMs and CPs (recommended) FM CP, PtP 8 CP, LAN 8 Rack Rack Racks, max. Modules per rack, max. 8	·	64
Number of expansion units, max. Number of DP masters integrated via CP 2; 1 DP and 1 DP (drive) 2; for DP Number of operable FMs and CPs (recommended) FM CP, PtP 8 CP, LAN 8 Rack Rack Racks, max. Modules per rack, max. 8	Hardware configuration	
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. • Modules per rack, max. 8		0
 integrated via CP Number of operable FMs and CPs (recommended) FM CP, PtP CP, LAN Rack Racks, max. Modules per rack, max. 1 DP and 1 DP (drive) 2; for DP 8 8 8 1 8 9 8 8 8 8 9 9 1 8 8 8 8 8 9 9 1 1 8 8 8 8 8 8 8 9 9 1 2 1 2 2 1 2 2 2 2 2 3 4 1 2 2 2 2 2 2 2 3 2 2 2 2 2<	·	
		2; 1 DP and 1 DP (drive)
 ►FM ◆ CP, PtP ◆ CP, LAN 8 Rack Racks, max. Modules per rack, max. 8 		
	Number of operable FMs and CPs (recommended)	
● CP, LAN 8 Rack ● Racks, max. 1 ● Modules per rack, max. 8	• FM	8
Rack ● Racks, max. 1 ● Modules per rack, max. 8	• CP, PtP	8
 Racks, max. Modules per rack, max. 8 	• CP, LAN	8
Modules per rack, max. 8	Rack	
	• Racks, max.	1
Time of day	 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
Behavior of the clock following POWER-ON	Clock continues running after POWER OFF
Behavior of the clock following expiry of backup	the clock continues at the time of day it had when power was switched
period	off
Operating hours counter	
Number	1
 Number/Number range 	0
 Range of values 	0 to 2^31 hours (when using SFC 101)
 Granularity 	1 h
retentive	Yes; Must be restarted at each restart
Clock synchronization	
• supported	Yes
• to MPI, master	Yes
● to MPI, slave	Yes
• to DP, master	Yes
• to DP, slave	Yes; Only time-of-day slave
• in AS, master	Yes
• in AS, slave	Yes
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,	Yes
type 1 Number of simultaneously controllable inputs	
horizontal installation	
— up to 40 °C, max.	4
— up to 60 °C, max.	4
vertical installation	7
— up to 40 °C, max.	4
Input voltage	7
Rated value (DC)	24 V
• for signal "0"	-3 to +5V
• for signal "1"	+15 to +30 V
Input current	13 10 100 1
• 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	10 pc, 1 yprodi
• 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
1	
Limitation of inductive shutdown voltage to	48 V
Limitation of inductive shutdown voltage to Controlling a digital input	
Controlling a digital input	No
Controlling a digital input Switching capacity of the outputs	
Controlling a digital input Switching capacity of the outputs on lamp load, max.	No
Controlling a digital input Switching capacity of the outputs	No
Controlling a digital input Switching capacity of the outputs on lamp load, max. Load resistance range	No 5 W

● for signal "0", max.	3 V; (2L+)
• for signal "1", min.	Rated voltage -2.5 V
Output current	Talos Vollago 2.0 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	110
with resistive load, max.	100 Hz
with inductive load, max.	0.2 Hz; According to IEC 60947-5-1, DC-13
• on lamp load, max.	100 Hz
Total current of the outputs (per group)	100112
horizontal installation	
— up to 40 °C, max.	4 A
— up to 60 °C, max.	3 A
all other mounting positions	
— up to 40 °C, max.	4 A
Integrated high-speed cams	
Switching accuracy (+/-)	70 μs
Cable length	. • •
shielded, max.	1 000 m
Analog inputs	1 333 III
Number of analog inputs	0
	0
Analog outputs	
Number of analog outputs	0
Encoder	
Connectable encoders	
• 2-wire sensor	No
Interfaces	<u>, </u>
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
Isolated	Yes
Interface types	
• RS 485	Yes
• •	Yes 200 mA
• RS 485	
RS 485Output current of the interface, max.	
RS 485 Output current of the interface, max. Protocols	200 mA
 RS 485 Output current of the interface, max. Protocols MPI 	200 mA Yes
 RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP slave 	Yes Yes
 RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master 	Yes Yes Yes Yes
 RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP slave Point-to-point connection 	Yes Yes Yes Yes
RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP slave Point-to-point connection MPI	Yes Yes Yes Yes No
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 Yes Yes No
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 Yes Yes No 12 Mbit/s
 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 Yes No 12 Mbit/s Yes
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 Yes Yes No 12 Mbit/s Yes Yes
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 Yes Yes No 12 Mbit/s Yes Yes Yes
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 Yes No 12 Mbit/s Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP slave Point-to-point connection MPI Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication S7 communication S7 communication, as client	Yes Yes Yes Yes No 12 Mbit/s Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP slave Point-to-point connection MPI Transmission rate, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server	Yes Yes Yes No 12 Mbit/s Yes Yes Yes Yes Yes Yes Yes Yes Yes Y
RS 485 Output current of the interface, max. Protocols MPI PROFIBUS DP master PROFIBUS DP slave Point-to-point connection MPI Transmission rate, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication S7 communication	Yes Yes Yes Yes No 12 Mbit/s Yes Yes Yes Yes Yes Yes Yes Yes Yes Y

 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 — S7 communication, as client	No
	Yes
— S7 communication, as server	Yes
Equidistance 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 simultaneously activated/deactivated, max. 	8
 Direct data exchange (slave-to-slave communication) 	Yes; as subscriber
— DPV1	Yes
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 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 communication)	Yes
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
2. Interface	
	Integrated PS 485 interface
Interface type Isolated	Integrated RS 485 interface Yes
Interface types	Voc
RS 485 Output current of the interface, may	Yes
Output current of the interface, max. Protocols	200 mA
Protocols	No
MPI DECERTIS DE master	No Voc. DP/DPIVE) Mostor
PROFIBUS DP master PROFIBUS DP alove	Yes; DP(DRIVE)-Master
PROFIBUS DP slave Deint to point connection	No No
Point-to-point connection	No
PROFIBUS DP master	40 Milit
• Transmission rate, max.	12 Mbit/s
Number of DP slaves, max.	64
Services	
— 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://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
	Yes
Autocrossing Change of ID address at runtime supported	
Change of IP address at runtime, supported	Yes
Interface types	V
• 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
Web server	Yes
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: 14, 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, 	32
max.	
 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
 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-
Address orga	300 CPU 31xC and CPU 31x, technical Data" for more details)
Address area — Inputs, max.	2 khuto
• •	2 kbyte
— Outputs, max.	2 kbyte
User data consistency, max. PROFINET IO Device	1 024 byte
Services	
— PG/OP communication	Yes
	Yes
Routing S7 communication	Yes; With loadable FBs, max. configurable connections: 14, max.
	number of instances: 32
— Isochronous mode	No
— IRT	Yes
— PROFlenergy	Yes; With SFB 73 / 74 prepared for loadable PROFlenergy standard FB for I-Device
 Shared device 	Yes
 Number of IO Controllers with shared device, 	2
max.	
Transfer memory	4.440 hutas Day IO Cantually and the standard
— Inputs, max.	1 440 byte; Per IO Controller with shared device
— Outputs, max.	1 440 byte; Per IO Controller with shared device
Submodules	04
— Number, max.	64
— User data per submodule, max.	1 024 byte
Open IE communication	
Number of connections, max.	8
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	Yes
Protocols PROFisafe	Yes No
Protocols PROFIsafe Redundancy mode	
Protocols PROFIsafe Redundancy mode Media redundancy	No
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ.	No 200 ms; PROFINET MRP
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max.	No
Protocols PROFIsafe Redundancy mode Media redundancy — Switchover time on line break, typ. — Number of stations in the ring, max. Open IE communication	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	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 — Number of connections, max.	No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 8
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.	No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 8 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.	No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 8
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.	No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 8 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,	No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 8 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 connection type 11H, max. — several passive connections per port, supported	No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 8 1 460 byte 32 768 byte Yes
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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.	No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 8 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 8
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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	No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 8 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 8 1 472 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, supported • ISO-on-TCP (RFC1006) — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. Web server • supported	No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 8 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 8 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. — 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 • supported • User-defined websites • Number of HTTP clients	No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 8 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 8 1 472 byte 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. — 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 • supported • User-defined websites	No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 8 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 8 1 472 byte 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. — 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 • supported • User-defined websites • Number of HTTP clients communication functions / header PG/OP communication	No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 8 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 8 12 768 byte Yes; via integrated PROFINET interface and loadable FBs 8 1 472 byte Yes Yes Yes Yes
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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 • supported • User-defined websites • Number of HTTP clients communication functions / header PG/OP communication Data record routing	No 200 ms; PROFINET MRP 50 Yes; via integrated PROFINET interface and loadable FBs 8 1 460 byte 32 768 byte Yes Yes; via integrated PROFINET interface and loadable FBs 8 32 768 byte Yes; via integrated PROFINET interface and loadable FBs 8 1 472 byte Yes Yes Yes Yes

N 1 (OD)	
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	16
 usable for PG communication 	15
 reserved for PG communication 	1
 adjustable for PG communication, min. 	1
— adjustable for PG communication, max.	15
usable for OP communication	15
reserved for OP communication	1
adjustable for OP communication, min.	1
adjustable for OP communication, max.	15
usable for S7 basic communication	14
reserved for S7 basic communication	0
adjustable for S7 basic communication, min.	0
	14
— adjustable for S7 basic communication, max.	
usable for S7 communication	14
— reserved for S7 communication	0
— adjustable for S7 communication, min.	0
— adjustable for S7 communication, max.	14
• 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.	16; 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	i, maiout continuation
Status/control variable	Yes
Variables	
	Inputs, outputs, memory bits, DB, times, counters 30
Number of variables, max. of which status variables, max.	
— of which status variables, max.— of which control variables, max.	30 14
— of which control variables, max.	17
-	Yes
Forcing Forcing variables	
Forcing, variables Number of variables, may	Inputs, outputs
Number of variables, max. Diagnostic buffer.	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
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	333.75
Ambient temperature during operation	
min.	0 °C
• max.	60 °C
	00 C
configuration / header	
Configuration software	Very CTED 7 VE E CD2 or higher and C7 Technology entire pools as
	Yes; STEP 7 V5.5 SP2 or higher and S7-Technology option package V4.2 SP3
Configuration software • STEP 7	Yes; STEP 7 V5.5 SP2 or higher and S7-Technology option package V4.2 SP3
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
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
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
Configuration software • STEP 7 configuration / programming / header • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language — LAD — FBD — STL — SCL	see instruction list 8 see instruction list see instruction list 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	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 — GRAPH	see instruction list 8 see instruction list see instruction list Yes 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 — HiGraph®	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 GRAPH HiGraph® Know-how protection	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
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	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
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 SIEP 7	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
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	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
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	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
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 Height	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
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 Height Depth	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
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 Height Depth Weights	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye
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 Height Depth	see instruction list 8 see instruction list see instruction list Yes Yes Yes Yes Yes Yes Yes Yes Yes Ye