SIEMENS

Data sheet

6ES7314-6EH04-0AB0



SIMATIC S7-300, CPU 314C-2PN/DP Compact CPU with 192 KB work memory, 24 DI/16 DO, 4 AI, 2 AO, 1 Pt100, 4 high-speed counters (60 kHz), 1st interface MPI/DP 12 Mbit/s, 2nd interface Ethernet PROFINET, with 2-port switch, Integr. power supply 24 V DC, Front connector (2x 40-pole) and Micro Memory Card required

General information	
HW functional status	01
Firmware version	V3.3
Product function	
• Isochronous mode	Yes; For PROFINET only
Engineering with	
Programming package	STEP 7 V5.5 or higher with HSP 191
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
external protection for power supply lines	Miniature circuit breaker, type C; min. 2 A; miniature circuit
(recommendation)	breaker type B, min. 4 A
Mains buffering	
 Mains/voltage failure stored energy time 	5 ms
• Repeat rate, min.	1 s
Load voltage L+	

Digital inputs	
Digital inputs	24 V
— Rated value (DC)	
Reverse polarity protection	Yes
Digital outputs	
— Rated value (DC)	24 V
 Reverse polarity protection 	No
Input current	
Current consumption (rated value)	850 mA
Current consumption (in no-load operation), typ.	190 mA
Inrush current, typ.	5 A
l²t	0.7 A ² ·s
Digital inputs	
• from load voltage L+ (without load), max.	80 mA
Digital outputs	
• from load voltage L+, max.	50 mA
Power loss	
Power loss, typ.	14 W
Memory	
Work memory	
• integrated	192 kbyte
• expandable	No
Size of retentive memory for retentive data	64 kbyte
blocks	
Load memory	
• Plug-in (MMC)	Yes
• Plug-in (MMC), max.	8 Mbyte
Data management on MMC (after last	10 y
programming), min.	
Backup	
• present	Yes; Guaranteed by MMC (maintenance-free)
• without battery	Yes; Program and data
CPU processing times	
for bit operations, typ.	0.06 µs
for word operations, typ.	0.12 μs
for fixed point arithmetic, typ.	0.16 µs
for floating point arithmetic, typ.	0.59 μs
CPU-blocks	
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
ОВ	
Description	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
 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; only for PROFINET
 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
Countary timers and their retentivity	
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
— aujustable — lower limit	0
— upper limit	999
— upper limit	
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
S7 times	Similar (minica sing by 10 min supusity)
• Number	256
- NUMBER	

Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	255
— preset	No retentivity
Time range	
— lower limit	10 ms
— upper limit	9 990 s
IEC timer	
• present	Yes
• Type	SFB
• Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	
retentive data area in total	all, max. 64 KB
Flag	
Number, max.	256 byte
Retentivity available	Yes; MB 0 to MB 255
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 kbyte; Max. 2048 bytes per block
Address area	
I/O address area	2 048 byte
• Inputs	2 048 byte
Outputs	2 040 byte
of which distributed	2 002 h. to
— Inputs	2 003 byte
— Outputs	2 010 byte
Process image	2 048 buto
• Inputs	2 048 byte
• Outputs	2 048 byte
• Inputs, adjustable	2 048 byte
Outputs, adjustable	2 048 byte
• Inputs, default	256 byte
Outputs, default	256 byte
Default addresses of the integrated channels	
— Digital inputs	136.0 to 138.7
— Digital outputs	136.0 to 137.7

— Analog inputs	800 to 809
— Analog outputs	800 to 803
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	16 048
— of which central	1 016
Outputs	16 096
— of which central	1 008
Analog channels	
• Inputs	1 006
— of which central	253
Outputs	1 007
— of which central	250
Hardware configuration Number of expansion units, max.	3
Number of DP masters	3
	1
• integrated	4
via CP Number of energials EMs and CPs (recommended)	3
Number of operable FMs and CPs (recommended)	8
• FM	
• CP, PtP	8
• CP, LAN	10
Rack	A
• Racks, max.	4
Modules per rack, max.	8; In rack 3 max. 7
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 period 	Clock continues to run with the time at which the power failure occurred
Operating hours counter	
Number	1
Number/Number range	0
Range of values	0 to 2^31 hours (when using SFC 101)
Granularity	1 h

Clock synchronization • supported • to MPI, master • to MPI, slave • to DP, master • to DP, slave • to DP, slave • to DP, slave • in AS, master • in AS, slave • on Ethernet via NTP Cligital inputs Number of digital inputs • of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC 131, type 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 80 °C, max. — up to 80 °C, max. - up to 80 °C, max. 12 Input voltage • Rated value (DC) • for signal "1" • for signa	• retentive	Yes; Must be restarted at each restart
to MPI, slave to DP, master to DP, master to DP, slave to mAS, master ves to nAS, slave ves to nEthernet via NTP Ves: As client Digital inputs	Clock synchronization	
• to MPI, slave • to DP, master • to DP, slave • to DP, slave • in AS, master • in AS, slave • on Ethernet via NTP Pes; As client Digital inputs Number of digital inputs • of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC 61131, hype 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. — up to 60 °C, max. 12 Input voltage • Rated value (DC) • for signal "1" Input delay (for rated value of input voltage) for standard inputs — parameterizable Pess (0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs — Rated value 7	• supported	Yes
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in AS, slave in AS, slave on Ethernet via NTP Pes: As client Pigital inputs Number of digital inputs of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC functions integrated channels (DI) Input characteristic curve in accordance with IEC functions integrated channels (DI) Input characteristic curve in accordance with IEC functions Integrated channels (DI) Input characteristic curve in accordance with IEC functions Input characteristic curve in accordance with IEC functions Input containstallation — up to 40 °C, max. 24 — up to 60 °C, max. 12 Input voltage Rated value (DC) for signal "1" +15 to +30 V Input current Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes, 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly self filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	• to MPI, slave	Yes
in AS, master in AS, slave ven Ethernet via NTP Pes; As client Digital inputs Number of digital inputs of digital inputs of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC further accordance with IEC full inputs (and inputs) Number of simultaneously controllable inputs Number of simultaneously controllable inputs horizontal installation —up to 40 °C, max. —up to 60 °C, max. 12 Input voltage Rated value (DC) for signal "0" 3 to +5V for signal "0" 415 to +30 V Input current for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable Pasted value Pes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) — Rated value For technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	• to DP, master	Yes; With DP slave only slave clock
in AS, slave on Ethernet via NTP Pigital inputs Number of digital inputs of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. — up to 60 °C, max. 12 vertical installation — up to 40 °C, max. 12 Input voltage Rated value (DC) of or signal "0" of or signal "1" +15 to +30 V Input current of or signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable Pasted value Yes, 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) The Air of "1", max. By is, Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length shielded, max. 1 000 m; 50 m for technological functions 1 000 m; 50 m for technological functions	• to DP, slave	Yes
• on Ethernet via NTP Digital inputs Number of digital inputs • of which inputs usable for technological functions integrated channels (DI) 194 195 194 195 194 195 195 196 197 197 198 198 199 199 199 199	● in AS, master	Yes
Number of digital inputs • of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. — up to 60 °C, max. — up to 40 °C, max. — up to 40 °C, max. 12 Input voltage • Rated value (DC) • for signal "1" • for signal "1" • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable • Rated value • Rated value • Fated value of input voltage) for standard inputs — parameterizable • Fated value • Septiment of the signal "1", typ. * Septiment of the signal with the signal continuation of the signal continuation of the signal continuation of the signal with the signal continuation of the signal with the signal continuation of the signal with the sign	• in AS, slave	Yes
Number of digital inputs • of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. — up to 40 °C, max. 12 vertical installation — up to 40 °C, max. 12 Input voltage • Rated value (DC) • for signal "0" • for signal "1" +15 to +30 V Input current • for signal "1", typ. 8 mA Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes, 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) 3 ms for technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	• on Ethernet via NTP	Yes; As client
• of which inputs usable for technological functions integrated channels (DI) Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. — up to 40 °C, max. — up to 40 °C, max. 12 Input voltage • Rated value (DC) • for signal "1" • for signal "1" • for signal "1" • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable Parameterizable Fated value Test of value Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) 3 ms for technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	Digital inputs	
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Input characteristic curve in accordance with IEC 61131, type 1 Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. — up to 60 °C, max. — up to 40 °C, max. 12 Vertical installation — up to 40 °C, max. 12 Input voltage • Rated value (DC) • for signal "0" • for signal "1" Input current • for signal "1", typ. 8 mA Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) 3 ms for technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	-	16
Number of simultaneously controllable inputs horizontal installation — up to 40 °C, max. 24 — up to 60 °C, max. 12 vertical installation — up to 40 °C, max. 12 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. 8 mA Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) 3 ms for technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	integrated channels (DI)	24
horizontal installation — up to 40 °C, max. — up to 60 °C, max. 24 — up to 60 °C, max. 12 vertical installation — up to 40 °C, max. 12 Input voltage • Rated value (DC) • for signal "0" • for signal "1" +15 to +30 V Input current • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	•	Yes
up to 40 °C, max up to 60 °C, max. vertical installation up to 40 °C, max. 12 Input voltage • Rated value (DC) • for signal "0" • for signal "1" +15 to +30 V Input current • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs parameterizable Parameterizable Rated value -	Number of simultaneously controllable inputs	
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vertical installation — up to 40 °C, max. Input voltage • Rated value (DC) • for signal "0" • for signal "1" +15 to +30 V Input current • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	— up to 40 °C, max.	24
- up to 40 °C, max. Input voltage • Rated value (DC) • for signal "0" • for signal "1" • to +30 V Input current • for signal "1", typ. 8 mA Input delay (for rated value of input voltage) for standard inputs - parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) Rated value 3 ms for technological functions - at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	— up to 60 °C, max.	12
Input voltage • Rated value (DC) • for signal "0" • for signal "1" • for signal "1" • for signal "1" • for signal "1", typ. Input current • for signal "1", typ. 8 mA Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	vertical installation	
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 for signal "0" for signal "1" to +5V for signal "1", typ. 8 mA Input delay (for rated value of input voltage) for standard inputs 	Input voltage	
• for signal "1" +15 to +30 V Input current • for signal "1", typ. 8 mA Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	Rated value (DC)	24 V
Input current • for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	● for signal "0"	-3 to +5V
 for signal "1", typ. Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions 	● for signal "1"	+15 to +30 V
Input delay (for rated value of input voltage) for standard inputs — parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	Input current	
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— parameterizable Yes; 0.1 / 0.3 / 3 / 15 ms (You can reconfigure the input delay of the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions		
the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be effective until the next filter cycle.) — Rated value 3 ms for technological functions — at "0" to "1", max. 8 µs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	for standard inputs	
for technological functions — at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions	— parameterizable	the standard inputs during program runtime. Please note that under certain circumstances your newly set filter time may not be
 — at "0" to "1", max. 8 μs; Minimum pulse width/minimum pause between pulses at maximum counting frequency Cable length • shielded, max. 1 000 m; 50 m for technological functions 	— Rated value	3 ms
maximum counting frequency Cable length ● shielded, max. 1 000 m; 50 m for technological functions	for technological functions	
• shielded, max. 1 000 m; 50 m for technological functions	— at "0" to "1", max.	
	Cable length	
• unshielded, max. 600 m; for technological functions: No	• shielded, max.	1 000 m; 50 m for technological functions
	• unshielded, max.	600 m; for technological functions: No

for technological functions	
— shielded, max.	50 m; at maximum count frequency
— unshielded, max.	not allowed

— unshielded, max.	not allowed
Digital outputs	
Number of digital outputs	16
• of which high-speed outputs	4; Notice: You cannot connect the fast outputs of your CPU in parallel
integrated channels (DO)	16
Short-circuit protection	Yes; Clocked electronically
 Response threshold, typ. 	1 A
Limitation of inductive shutdown voltage to	L+ (-48 V)
Controlling a digital input	Yes
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 "1", min.	L+ (-0.8 V)
Output current	
● for signal "1" rated value	500 mA
• for signal "1" permissible range, min.	5 mA
• for signal "1" permissible range, max.	0.6 A
• for signal "1" minimum load current	5 mA
• for signal "0" residual current, max.	0.5 mA
Parallel switching of two outputs	
• for uprating	No
 for redundant control of a load 	Yes
Switching frequency	
• with resistive load, max.	100 Hz
• with inductive load, max.	0.5 Hz
• on lamp load, max.	100 Hz
• of the pulse outputs, with resistive load, max.	2.5 kHz
Total current of the outputs (per group)	
horizontal installation	
— up to 40 °C, max.	3 A
— up to 60 °C, max.	2 A
vertical installation	
— up to 40 °C, max.	2 A
Cable length	
• shielded, max.	1 000 m
• unshielded, max.	600 m

Analog inputs	
Number of analog inputs	5
 For voltage/current measurement 	4
For resistance/resistance thermometer	1
measurement	
integrated channels (AI)	5; 4x current/voltage, 1x resistance
permissible input voltage for current input (destruction limit), max.	5 V; Permanent
permissible input voltage for voltage input	30 V; Permanent
(destruction limit), max.	35 V, F Gillianoni
permissible input current for voltage input (destruction limit), max.	0.5 mA; Permanent
permissible input current for current input (destruction limit), max.	50 mA; Permanent
No-load voltage for resistance-type transmitter, typ.	3.3 V
Constant measurement current for resistance-type transmitter, typ.	1.25 mA
Technical unit for temperature measurement adjustable	Yes; Degrees Celsius / degrees Fahrenheit / Kelvin
Input ranges	
• Voltage	Yes; ±10 V / 100 k Ω ; 0 V to 10 V / 100 k Ω
Current	Yes; ±20 mA / 100 Ω ; 0 mA to 20 mA / 100 Ω ; 4 mA to 20 mA / 100 Ω
Resistance thermometer	Yes; Pt 100 / 10 MΩ
Resistance	Yes; 0 Ω to 600 Ω / 10 $M\Omega$
Input ranges (rated values), voltages	
• 0 to +10 V	Yes
— Input resistance (0 to 10 V)	100 kΩ
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	100 Ω
• -20 mA to +20 mA	Yes
— Input resistance (-20 mA to +20 mA)	100 Ω
• 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	100 Ω
Input ranges (rated values), resistance thermometer	
• Pt 100	Yes
— Input resistance (Pt 100)	10 ΜΩ
Input ranges (rated values), resistors	
• 0 to 600 ohms	Yes
— Input resistance (0 to 600 ohms)	10 ΜΩ
Thermocouple (TC)	
Temperature compensation	

— parameterizable	No
Characteristic linearization	
parameterizable	Yes; by software
for resistance thermometer	Pt 100
Cable length	
• shielded, max.	100 m
Analog outputs	
Number of analog outputs	2
integrated channels (AO)	2
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	55 mA
Current output, no-load voltage, max.	14 V
Output ranges, voltage	Yes
• 0 to 10 V	Yes
• -10 V to +10 V	res
Output ranges, current	Voc
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Connection of actuators	V 1450
 for voltage output two-wire connection 	Yes; Without compensation of the line resistances
 for voltage output four-wire connection 	No
for current output two-wire connection	Yes
Load impedance (in rated range of output)	
with voltage outputs, min.	1 kΩ
 with voltage outputs, capacitive load, max. 	0.1 μF
with current outputs, max.	$300~\Omega$
with current outputs, inductive load, max.	0.1 mH
Destruction limits against externally applied voltages an	d currents
 Voltages at the outputs towards MANA 	16 V; Permanent
Current, max.	50 mA; Permanent
Cable length	
• shielded, max.	200 m
Analog value generation for the inputs	
Measurement principle	Actual value encryption (successive approximation)
Integration and conversion time/resolution per channel	
 Resolution with overrange (bit including sign), max. 	12 bit
• Integration time, parameterizable	Yes; 16.6 / 20 ms
 Interference voltage suppression for interference frequency f1 in Hz 	50 / 60 Hz
 permissible input frequency, max. 	400 Hz

Time constant of the input filter	0.38 ms
Basic execution time of the module (all	1 ms
channels released)	

Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
 Resolution with overrange (bit including sign), 	12 bit
max.	
 Conversion time (per channel) 	1 ms
Settling time	
• for resistive load	0.6 ms
• for capacitive load	1 ms
• for inductive load	0.5 ms

• for inductive load	0.5 ms
Encoder	
Connection of signal encoders	
• for voltage measurement	Yes
• for current measurement as 2-wire transducer	Yes; with external supply
• for current measurement as 4-wire transducer	Yes
 for resistance measurement with two-wire connection 	Yes; Without compensation of the line resistances
 for resistance measurement with three-wire connection 	No
 for resistance measurement with four-wire connection 	No
Connectable encoders	
• 2-wire sensor	Yes
 permissible quiescent current (2-wire sensor), max. 	1.5 mA

Errors/accuracies	
Temperature error (relative to input range), (+/-)	0.006 %/K
Crosstalk between the inputs, min.	60 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.06 %
Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	0.1 %
Linearity error (relative to output range), (+/-)	0.15 %
Temperature error (relative to output range), (+/-)	0.01 %/K
Crosstalk between the outputs, min.	60 dB
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.06 %
Operational error limit in overall temperature range	
 Voltage, relative to input range, (+/-) 	1 %
Current, relative to input range, (+/-)	1 %

 Resistance, relative to input range, (+/-) 	1 %
 Voltage, relative to output range, (+/-) 	1 %
 Current, relative to output range, (+/-) 	1 %
Basic error limit (operational limit at 25 °C)	
 Voltage, relative to input range, (+/-) 	0.8 %; Linearity error ±0.06 %
 Current, relative to input range, (+/-) 	0.8 %; Linearity error ±0.06 %
 Resistance, relative to input range, (+/-) 	0.8 %; Linearity error ±0.2 %
 Resistance thermometer, relative to input range, (+/-) 	0.8 %
 Voltage, relative to output range, (+/-) 	0.8 %
 Current, relative to output range, (+/-) 	0.8 %
Interference voltage suppression for f = n x (f1 +/- 1 %),	f1 = interference frequency
 Series mode interference (peak value of interference < rated value of input range), min. 	30 dB
• Common mode interference, min.	40 dB
Interfaces	
Number of industrial Ethernet interfaces	1; 2 ports (switch) RJ45
Number of PROFINET interfaces	1; 2 ports (switch) RJ45
Number of RS 485 interfaces	1; Combined MPI / PROFIBUS DP
Number of RS 422 interfaces	0
1. Interface	
Interface type	Integrated RS 485 interface
Physics	RS 485
Isolated	Yes

1. Interface	Intermeted DO 405 interfere
Interface type	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	

Number of DP slaves, max. PG/OP communication PG/OP communication Possible State Communication PST basic communication PST basic communication PST communication PST communication PST communication PST communication PST communication PST communication, as slient PST communication, as server PST communication of DP slaves PST communication PDF1 PST communication PST communication, as server PST communication, as server PST communication, as server PST communication, as server PST communication PST communication, as server PST communication, as server PST communication PST communica	Transmission rate, max.	12 Mbit/s
- PG/OP communication - Routing - Routing - Global data communication - S7 basic communication - S7 communication, as client - S7 communication, as server - Equidistance - Isochronous mode - SYNC/FREEZE - Activation/deactivation of DP slaves - Number of DP slaves that can be simultaneously activated/deactivated, max Direct data exchange (slave-to-slave communication) - DPV1 - Yes - Number of DP slaves - Inputs, max - Outputs, max - Yes; as subscriber - Inputs, max - 24 byte - Inputs, max - 244 byte - Inputs, max - 244 byte - Outputs, max - Yes; only with passive interface - Address area, max - Syrices - PG/OP communication - Routing - Routing - Routing - S7 communication - S7 communicat	 Number of DP slaves, max. 	124
- Routing Yes - Global data communication No - S7 basic communication Yes; I blocks only - S7 communication, as client No - S7 communication, as client No - S7 communication, as server Yes - Equidistance Yes - Isochronous mode No - SYNC/FREZE Yes - Activation/deactivation of DP slaves Yes - Number of DP slaves that can be simultaneously activated/deactivated, max Direct data exchange (slave-to-slave communication) - DPV1 Yes - Address area - Inputs, max. 2 kbyte - User data per DP slave - Inputs, max. 2 kbyte - Outputs, max. 244 byte - Outputs, max. 244 byte - Outputs, max. 244 byte - ST communication Yes; only with passive interface • Address area, max. 32 byte - Services - PG/OP communication Yes - Routing Yes; Only with active interface - S7 communication No - S7 basic communication Yes - S7 Communicati	Services	
Global data communication S7 basic communication S7 communication S7 communication S7 communication S7 communication S8 communication S9 commu	— PG/OP communication	Yes
S7 basic communication S7 communication S7 communication S7 communication S7 communication, as client S7 communication, as client S7 communication, as server Equidistance Isochronous mode SYNC/FREEZE Services S	— Routing	Yes
- S7 communication	 Global data communication 	No
- S7 communication, as client	 S7 basic communication 	Yes; I blocks only
— S7 communication, as server — Equidistance — Isochronous mode — SYNC/FREEZE — Activation/deactivation of DP slaves — Number of DP slaves that can be simultaneously activated/deactivated, max. — Direct data exchange (slave-to-slave communication) — DPV1 Address area — Inputs, max. — Outputs, max. —	— S7 communication	Yes
- Equidistance - Isochronous mode - SYNC/FREZE - Activation/deactivation of DP slaves - Number of DP slaves that can be simultaneously activated/deactivated, max Direct data exchange (slave-to-slave communication) - DPV1 - Yes - Inputs, max, - Outputs, max, - Outputs, max, - Outputs, max, - Outputs, max Outputs	 S7 communication, as client 	No
- Isochronous mode No - SYNC/FREEZE Yes - Activation/deactivation of DP slaves Yes - Number of DP slaves that can be simultaneously activated/deactivated, max Direct data exchange (slave-to-slave communication) - DPV1 Yes Address area - Inputs, max. 2 kbyte - Outputs, max. 24 byte - User data per DP slave - Inputs, max. 244 byte - Outputs, max. 32 - Ves; only with passive interface - Address area, max. 32 - User data per address area, max. 32 - User data per address area, max. 32 - User data per address area, max. 32 - Outputs deach are deach Yes; only with active interface - Address area, max. 32 - Facommunication No - S7 communication Yes - S7 communication Yes - S7 communication, as client No - S7 communication, as server Yes; Connection configured on one side only - DPV1 - Direct data exchange (slave-to-slave communication) - DPV1 - DPV1 - DPV1 - No	 S7 communication, as server 	Yes
- SYNC/FREZE - Activation/deactivation of DP slaves - Number of DP slaves that can be simultaneously activated/deactivated, max Direct data exchange (slave-to-slave communication) - DPV1 - Yes Address area - Inputs, max Outputs, max 244 byte PROFIBUS DP slave • Transmission rate, max. • automatic baud rate search • Address area, max. • automatic baud rate search • Address area, max. • User data per address area, max. • User data per address area, max. • Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 communication - S7 communication - S7 communication - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 - No	— Equidistance	Yes
— Activation/deactivation of DP slaves — Number of DP slaves that can be simultaneously activated/deactivated, max. — Direct data exchange (slave-to-slave communication) — DPV1 Address area — Inputs, max. — Outputs, max. — 244 byte PROFIBUS DP slave • Transmission rate, max. • automatic baud rate search • Address area, max. • Address area, max. • User data per address area, max. • 20 byte Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication — S7 communication — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No	— Isochronous mode	No
- Number of DP slaves that can be simultaneously activated/deactivated, max. - Direct data exchange (slave-to-slave communication) - DPV1 Yes Address area - Inputs, max. 2 kbyte - Outputs, max. 244 byte - 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 - S7 basic communication No - S7 basic 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) - DPV1 No	— SYNC/FREEZE	Yes
simultaneously activated/deactivated, max. — Direct data exchange (slave-to-slave communication) — DPV1 Address area — Inputs, max. — Outputs, max. — Outp	 Activation/deactivation of DP slaves 	Yes
communication) 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 I 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 Address area, max. 7es; Only with active interface Active interface PG/OP communication No Sory in So		8
Address area Inputs, max. Outputs, max. 2 kbyte User data per DP slave Inputs, max. Outputs, max. 244 byte PROFIBUS DP slave 1 Transmission rate, max. 12 Mbit/s automatic baud rate search Address area, max. 22 byte Services PG/OP communication Routing Global data communication S7 basic communication S7 communication, as server S7 communication, as server DPV1 No		Yes; as subscriber
- 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 - Routing Yes; Only with active interface - S7 basic communication No - S7 communication Yes - 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) - DPV1 No	— DPV1	Yes
User data per DP slave Inputs, max. Inputs, max. Outputs, max. Outputs, max. Outputs, max. PROFIBUS DP slave I Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. User data per address area, max. PROFIBUS PROFIBUS DP slave I Mbit/s Address area, max. Services PG/OP communication PG/OP communication PG/OP communication No S7 basic communication No S7 communication PS7 communication, as client S7 communication, as server Direct data exchange (slave-to-slave communication) DDV1 No	Address area	
User data per DP slave Inputs, max. Outputs, max. 244 byte PROFIBUS DP slave Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. Services PROFOP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 No	— Inputs, max.	2 kbyte
Inputs, max Outputs, max Outputs, max Outputs, max. PROFIBUS DP slave 1 Mbit/s 1 automatic baud rate search Address area, max. 1 User data per address area, max. 2 byte Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 No	— Outputs, max.	2 kbyte
PROFIBUS DP slave ● Transmission rate, max. • automatic baud rate search • Address area, max. • User data per address area, max. 22 byte Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as server S7 communication, as server PS7 communication, as server PS7 communication, as server PS7 communication, as server PS8 communication PS9 communication No S7 communication, as server Yes; Connection configured on one side only Yes Communication) No No	User data per DP slave	
PROFIBUS DP slave • Transmission rate, max. • automatic baud rate search • Address area, max. • User data per address area, max. • PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 12 Mbit/s 12 Mbit/s 13 Mbit/s 14 Mbit/s 15 Messive interface 16 Yes 17 Yes 18 Yes; Only with active interface 19 No 10 No 11 No 12 Mbit/s 12 Mbit/s 12 Mbit/s 13 Messive interface 19 Yes 10 No 11 Yes 12 Mbit/s 13 Mbit/s 14 Mit/s 15 No 16 Yes 17 Connection configured on one side only 17 Yes 18 Yes 18 Yes 19 Connection configured on one side only 19 Yes 10 No	— Inputs, max.	244 byte
 Transmission rate, max. automatic baud rate search Address area, max. User data per address area, max. Bervices PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication S7 communication S7 communication, as client S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 No 	— Outputs, max.	244 byte
 automatic baud rate search Address area, max. User data per address area, max. PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 Yes; only with passive interface 32 Yes; only with passive interface No Yes Only with active interface No Yes Conly with active interface No Yes Conly with active interface No Yes; Only with active interface No Yes Conly Yes Connection configured on one side only Yes Communication) No 	PROFIBUS DP slave	
 Address area, max. User data per address area, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No 32 32	Transmission rate, max.	12 Mbit/s
User data per address area, max. Services - PG/OP communication - Routing - Global data communication - S7 basic communication - S7 communication - S7 communication - S7 communication - S7 communication, as client - S7 communication, as server - Direct data exchange (slave-to-slave communication) - DPV1 No 32 byte 32 byte 32 byte 32 byte	 automatic baud rate search 	Yes; only with passive interface
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) - DPV1 No	 Address area, max. 	32
 — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication — S7 communication, as client — S7 communication, as server — S7 communication, as server — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No 	 User data per address area, max. 	32 byte
 Routing Global data communication S7 basic communication S7 communication S7 communication S7 communication, as client S7 communication, as server S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 Yes; Only with active interface No Yes Connection configured on one side only Yes No No 	Services	
 Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 No No No No No No 	— PG/OP communication	Yes
 S7 basic communication S7 communication S7 communication, as client S7 communication, as server S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 No No No 	— Routing	Yes; Only with active interface
 S7 communication S7 communication, as client S7 communication, as server Direct data exchange (slave-to-slave communication) DPV1 Yes Yes Connection configured on one side only Yes No 	 Global data communication 	No
 — S7 communication, as client — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 No Yes; Connection configured on one side only Yes Yes No 	— S7 basic communication	No
 — S7 communication, as server — Direct data exchange (slave-to-slave communication) — DPV1 Yes; Connection configured on one side only Yes Yes No 	— S7 communication	Yes
 Direct data exchange (slave-to-slave communication) DPV1 No 	 S7 communication, as client 	No
communication) — DPV1 No	 S7 communication, as server 	Yes; Connection configured on one side only
		Yes
Transfer memory	— DPV1	No
	Transfer memory	

— Inputs	244 byte
— Outputs	244 byte

2. Interface	
Interface type	PROFINET
Physics	Ethernet RJ45
Isolated	Yes
automatic detection of transmission rate	Yes; 10/100 Mbit/s
Autonegotiation	Yes
Autocrossing	Yes
Change of IP address at runtime, supported	Yes
Interface types	
Number of ports	2
• integrated switch	Yes
Protocols	
• MPI	No
PROFINET IO Controller	Yes; Also simultaneously with IO-Device functionality
PROFINET IO Device	Yes; Also simultaneously with IO Controller functionality
PROFINET CBA	Yes
PROFIBUS DP master	No
PROFIBUS DP slave	No
Open IE communication	Yes; Via TCP/IP, ISO on TCP, and UDP
Web server	Yes
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: 10, max number of instances: 32
— Isochronous mode	Yes; OB 61
— IRT	Yes
— Shared device	Yes
— Prioritized startup	Yes
Number of IO devices with prioritized	32
startup, max.	
— 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	$250~\mu s$ to $512~m s$ (depending on the operating mode, see Manual "S7-300 CPU 31xC and CPU 31x, technical Data" for more details)
Address area	
— Inputs, max.	2 kbyte
— Outputs, max.	2 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: 10, 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, 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
PROFINET CBA	
acyclic transmission	Yes
cyclic transmission	Yes
Open IE communication	
Number of connections, max.	8

Local port numbers used at the system end
 0,

0, 20, 21, 23, 25, 80, 102, 135, 161, 443, 8080, 34962, 34963,

34964, 65532, 65533, 65534, 65535

• Keep-alive function, supported

Yes

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 • ISCO-nTCP (RFC1006) — Number of connections, max. — Data length, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UDP — Number of connections, max. — Data length, max. • UUP — Number of connections, max. — Data length, max. • UUP — Number of connections, max. — Data length, max. • UUP — Ves; via integrated PROFINET interface and loadable FBs 8 1 472 byte Web server • supported • User-defined websites • Number of HTTP clients Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication • supported • supported • Supported • Supported • Number of GD loops, max. • Number of GD packets, receiver, max. • Number of GD packets, receiver, max. • Size of GD packets, max. • Size of GD packets, constitution of the constitution of the constitution of the constitution of the communication • supported • supported • supported • Supported • Supported • Size of GD packets, max. • Size of GD packets, constitution of Size of CD packets, constituti	Protocols	
- Switchover time on line break, typ Number of stations in the ring, max. Open IE communication	Redundancy mode	
- 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. Data length, max. Data length, max. Pata length, max. B - Data length, max. B - Number of connections, max Data length, max. B - Number of connections, max Data length, max. B - Number of connections, max Data length, max. B - Number of connections, max Data length, max. B - State defined websites - Number of HTTP clients S Isochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication PG/OP communication Psychology - Supported - 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, freceiver, max Size of GD packets, freceiver, max Size of GD packets (of which consistent), max. S7 basic communication	Media redundancy	
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 connection type 11H, max. Several passive connections per port, supported ISO-on-TCP (RFC1006) Number of connections, max. Data length, max. Several passive connections, max. Data length, max. Several passive connections, max. Several passive connection passive connection passive connection passive connections. Several passive connection passive connections, max. Several passive connection passive	 Switchover time on line break, typ. 	200 ms; PROFINET MRP
TCP/IP Number of connections, max. Data length for connection type 01H, max. Data length for connection type 11H, 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. Data length, max. Several passive connections, max. Several passive connections per port, supported passive profile passive province	 Number of stations in the ring, max. 	50
- 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. • 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. • USE-defined websites • Ves • Number of HTTP clients • Supported • User-defined websites • Number of HTTP clients • Sochronous operation (application synchronized up to terminal) Communication functions PG/OP 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 (of which consistent), max. • Size of GD packet (of which consistent), max. • Size of GD packet (of which consistent), max. • Size of GD packet (of which consistent), max. • Size of GD packet (of which consistent), max.	Open IE communication	
- 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 Data length, max. • UDP - Number of connections, max Data length, max. - Data length, max Data length, max. • UUP - Number of connections, max Data length, max. - Data length max. - Data length max. - Ves; via integrated PROFINET interface and loadable FBs - Number of connections, max Base of connections and loadable FBs - Number of HTTP clients - Supported - Supported - Supported (application synchronized up to terminal) - Communication functions - PG/OP 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 packet (of which consistent), max.	• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs
- 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. - Data length websites • Supported • User-defined websites • Number of HTTP clients Sochronous mode	 Number of connections, max. 	8
	 Data length for connection type 01H, max. 	1 460 byte
supported ISO-on-TCP (RFC1006) Number of connections, max. Data length, max. UDP Number of connections, max. Data length, max. Data length, max. Selection of connections, max. Data length, max. Selection of connections, max. Data length, max. Selection of connections, max. Selection of connections, max. Selection of HTTP clients Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Selection of GD loops, max. Number of GD packets, max. Number of GD packets, receiver, max. Number of GD packets, max. Number of GD packets, max. Size of GD packet, max. Size of GD packet (of which consistent), max. Size of GD communication	 Data length for connection type 11H, max. 	32 768 byte
- Number of connections, max Data length, max. - UDP - Number of connections, max Data length, max. - 1 472 byte Web server • supported • User-defined websites • Number of HTTP clients - Number of HTTP clients Sochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP 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. S7 basic communication		Yes
— Data length, max. ■ UDP — Number of connections, max. — Data length, max. — Data length, max. — Data length, max. — Data length, max. — Data length, max. — Data length, max. — 1 472 byte Web server ■ supported ■ Ves ■ Number of HTTP clients Sochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication PG/OP 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. S7 basic communication 22 byte S7 basic communication	• ISO-on-TCP (RFC1006)	Yes; via integrated PROFINET interface and loadable FBs
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Number of connections, max Data length, max. 1 472 byte Web server • supported • User-defined websites • Number of HTTP clients Sochronous mode	— Data length, max.	32 768 byte
— Data length, max. Web server • supported • User-defined websites • Number of HTTP clients Sochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Pata record routing Global data communication • supported • Number of GD loops, 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. State of GD packet (of which consistent), max. 1 472 byte Yes Yes Yes • Nember of HTTP clients Yes; For PROFINET only Yes; For PROFINET only Yes; For PROFINET only Yes 8 • Number of GD packets, max. • Supported • Number of GD packets, max. • Size of GD packets, transmitter, max. • Size of GD packets, max. • Size of GD packet (of which consistent), max. State of GD packet (of which consistent), max.	• UDP	Yes; via integrated PROFINET interface and loadable FBs
Web server • supported • User-defined websites • Number of HTTP clients Yes • Number of HTTP clients Isochronous mode	 Number of connections, max. 	8
Supported User-defined websites Ves Number of HTTP clients Isochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication PG/OP communication Yes Global data communication supported Number of GD loops, 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. Size of GD packet (of which consistent), max. Size os communication Yes Number of GD packet (of which consistent), max. Size os GD packet (of which consistent), max. Size os communication	— Data length, max.	1 472 byte
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Isochronous mode Isochronous operation (application synchronized up to terminal) Communication functions PG/OP communication Ptes 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 packet (of which consistent), max. ST basic communication Yes Yes 8 8 8 9 Yes 22 byte ST basic communication 22 ST basic communication	 User-defined websites 	Yes
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Communication functions PG/OP communication Pata 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, max. • Size of GD packet (of which consistent), max. S7 basic communication		
Communication functions PG/OP communication Pata 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, max. • Size of GD packet (of which consistent), max. ST basic communication		Yes; For PROFINET only
PG/OP communication Pata 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. 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. Size of GD packet (of which consistent), max.	to terminal)	
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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. Number of GD packets, receiver, max. Size of GD packets, max. Size of GD packet (of which consistent), max. 22 byte S7 basic communication	PG/OP communication	Yes
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 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 	Number of GD loops, max.	8
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 Size of GD packets, max. Size of GD packet (of which consistent), max. S7 basic communication 	 Number of GD packets, transmitter, max. 	8
• Size of GD packet (of which consistent), max. 22 byte S7 basic communication	 Number of GD packets, receiver, max. 	8
S7 basic communication	• Size of GD packets, max.	22 byte
	• Size of GD packet (of which consistent), max.	22 byte
• supported Yes	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
• Oser data per job (or which consistent), max.	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
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 master/slave, max. 	4 000 byte
 Data length of all outgoing connections master/slave, max. 	4 000 byte
 Number of device-internal and PROFIBUS interconnections 	500
 Data length of device-internal und PROFIBUS interconnections, max. 	4 000 byte
Data length per connection, max.	1 400 byte
Remote interconnections with acyclic transmission	
— Sampling interval, 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

-	450 h. 4.
— 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	12
 usable for PG communication 	11
 reserved for PG communication 	1
 adjustable for PG communication, min. 	1
 adjustable for PG communication, max. 	11
usable for OP communication	11
 reserved for OP communication 	1
 adjustable for OP communication, min. 	1
 adjustable for OP communication, max. 	11
usable for S7 basic communication	8
 reserved for S7 basic communication 	0
 adjustable for S7 basic communication, 	0
min.	
 adjustable for S7 basic communication, 	8
max.	
usable for S7 communication	10
 reserved for S7 communication 	0
 adjustable for S7 communication, min. 	0
 adjustable for S7 communication, max. 	10
• 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.	12; 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	17
• Forcing	Yes
• Forcing, variables	Inputs, outputs
Number of variables, max.	10
Diagnostic buffer	
• present	Yes
•	500
Number of entries, max.	No
— adjustable	
— 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	V
• can be read out	Yes
Interrupts/diagnostics/status information	
Diagnostics indication LED	
Status indicator digital input (green)	Yes
 Status indicator digital output (green) 	Yes
Integrated Functions	
Number of counters	4; See "Technological Functions" manual
Counting frequency (counter) max.	60 kHz
Frequency measurement	Yes
Number of frequency meters	4; up to 60 kHz (see "Technological Functions" manual)
controlled positioning	Yes
integrated function blocks (closed-loop control)	Yes; PID controller (see "Technological Functions" manual)
PID controller	Yes
Number of pulse outputs	4; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)
Limit frequency (pulse)	2.5 kHz
Potential separation	
Potential separation digital inputs	
 Potential separation digital inputs 	Yes
 between the channels 	No
between the channels and backplane bus	Yes

Potential separation digital outputs between the channels between the channels, in groups of between the channels, in groups of between the channels, in groups of between the channels and backplane bus Potential separation analog inputs Potential separation analog inputs between the channels between the channels and backplane bus between the channels and backplane bus between the channels and backplane bus Potential separation analog outputs between the channels and backplane bus Potential separation analog outputs between the channels and backplane bus Bolation Bolation Bolation On °C Ambient conditions Ambient emperature during operation min. onx of °C Configuration Configuration Configuration software STEP 7 Yes; V5.5 or higher Programming Command set See instruction list see instruction list See instruction list see instruction list see instruction list Programming language LAD FBD System function (SFC) see instruction list Programming language LAD FBD STL SCL SCL Yes SCL CFC Yes GRAPH HiGraph® Yes Know-how protection Slock encryption Pyes; With S7 block Privacy	Potential separation digital outputs	
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Potential separation analog outputs between the channels between the channels and backplane bus Postalation Isolation tested with Ambient conditions Ambient temperature during operation min. max. 60 °C Configuration Configuration Configuration Configuration Programming Command set Nesting levels System function s(SFC) System function blocks (SFB) Programming language — LAD — FBD — STL — SCL — CFC — GRAPH — HiGraph® Know-how protection • User program protection/password protection • User program protection/password protection • User program protection/password protection • User program protection/password protection • User program protection/password protection • User program protection/password protection • User program protection/password protection • User program protection/password protection • User program protection/password protection • Ves; With S7 block Privacy	·	Yes
between the channels between the channels and backplane bus Solation		V 1 1/0
Solation		
Isolation tested with 600 V DC Ambient conditions Ambient temperature during operation • min. • min. • max. 60 °C Configuration Configuration software • STEP 7 Yes; V5.5 or higher Programming • Command set • Nesting levels • System functions (SFC) • System function blocks (SFB) Programming language — LAD — FBD — FBD — STL — SCL — CFC — GRAPH — HiGraph® Know-how protection • User program protection/password protection • User program protection/password protection • User program protection/password protection • Block encryption Dimensions		
Isolation tested with Ambient conditions Ambient emperature during operation • min. • max. 60 °C Configuration Configuration software • STEP 7 Programming • 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	 between the channels and backplane bus 	Yes
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Ambient temperature during operation In min. In max. In	Isolation tested with	600 V DC
Ambient temperature during operation In min. In max. In	Ambient conditions	
● 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 — STL Yes — SCL Yes — CFC Yes — GRAPH Yes — HiGraph® Yes Know-how protection Yes ● Block encryption Yes; With S7 block Privacy		
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 SCL SCL Yes CFC GRAPH HiGraph® Know-how protection User program protection/password protection Block encryption Pess, V5.5 or higher Yes; V5.5 or higher Yes; V5.5 or higher	• min.	0 °C
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STEP 7 Yes; V5.5 or higher Programming Command set See instruction list Nesting levels System functions (SFC) see instruction list System function blocks (SFB) see instruction list Programming language LAD Yes FBD Yes STL SCL CFC GRAPH HiGraph® Know-how protection User program protection/password protection STE Yes; With S7 block Privacy Dimensions	O-uf-wash-u	
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Command set Nesting levels System functions (SFC) System function blocks (SFB) Programming language — LAD — FBD — FBD — STL — SCL — CFC — GRAPH — HiGraph® Know-how protection User program protection/password protection Block encryption Psystem function list 8 8 8 8 8 8 8 8 8 8 8 8 8		
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System functions (SFC) System function blocks (SFB) Programming language		
● System function blocks (SFB) Programming language — LAD — FBD — Yes — STL — SCL — SCL — CFC — GRAPH — HiGraph® Know-how protection ● User program protection/password protection ● Block encryption Programming language Yes Yes Yes Yes Yes Yes Yes Yes Yes Y		
Programming language - LAD Yes - FBD Yes - STL Yes - SCL Yes - CFC Yes - GRAPH Yes - HiGraph® Yes Know-how protection • User program protection/password protection • Block encryption Yes; With S7 block Privacy		
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- FBD Yes - STL Yes - SCL Yes - CFC Yes - GRAPH Yes - HiGraph® Yes Know-how protection • User program protection/password protection • Block encryption Yes; With S7 block Privacy		Vas
- STL - SCL - SCL - CFC - GRAPH - HiGraph® Know-how protection • User program protection/password protection • Block encryption Pimensions Yes Yes Yes Yes Yes Yes Yes Y		
- SCL - CFC - GRAPH - HiGraph® Yes Know-how protection • User program protection/password protection • Block encryption Pimensions Yes Yes Yes Yes Yes Yes Yes Y		
- CFC - GRAPH - HiGraph® Yes Know-how protection • User program protection/password protection • Block encryption Pimensions Yes Yes Yes Yes Yes Yes Yes Y		
- GRAPH - HiGraph® Yes Know-how protection • User program protection/password protection • Block encryption Pimensions Yes Yes Yes Yes Yes Yes; With S7 block Privacy		
— HiGraph® Know-how protection ● User program protection/password protection ● Block encryption Yes; With S7 block Privacy Dimensions		
Know-how protection • User program protection/password protection • Block encryption Yes; With S7 block Privacy Dimensions		
 User program protection/password protection Block encryption Yes; With S7 block Privacy Dimensions		Yes
Block encryption Yes; With S7 block Privacy Dimensions		V
Dimensions		
	Block encryption	Yes; With S7 block Privacy
Width 120 mm	Dimensions	
	Width	120 mm

Height	125 mm	
Depth	130 mm	
Weights		
Weight, approx.	730 g	
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