6ES7314-6CH04-0AB0

Data sheet



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

General information	
HW functional status	01
Firmware version	V3.3
Engineering with	
Programming package	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
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)	Miniature circuit breaker, type C; min. 2 A; miniature circuit 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	
— Rated value (DC)	24 V
 Reverse polarity protection 	Yes
Digital outputs	
— Rated value (DC)	24 V
 Reverse polarity protection 	No
Input current	
Current consumption (rated value)	880 mA
Current consumption (in no-load operation), typ.	150 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.	13 W
Memory	
Work memory	
• integrated	192 kbyte
• expandable	No
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
OB	
Number, max.	see instruction list
• Size, max.	64 kbyte
Number of free cycle OBs	1; OB 1
Number of time alarm OBs	1; OB 10
 Number of delay alarm OBs 	2; OB 20, 21
 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 startup OBs 	1; OB 100
 Number of asynchronous error OBs 	5; OB 80, 82, 85, 86, 87
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	
— lower limit	0
— upper limit	999
IEC counter	
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
S7 times	
Number	256
Retentivity	
— adjustable	Yes
— lower limit	0
— upper limit	255
— preset	No retentivity

Timo rongo	
Time range — lower limit	10 ms
— lower limit — upper limit	9 990 s
— upper limit	0 000 0
• present	Yes
• Type	SFB
Number	Unlimited (limited only by RAM capacity)
Data areas and their retentivity	S.m.mod (miniod only by to the outpoolity)
Retentive data area (incl. timers, counters, flags), max.	64 kbyte
Flag	04 kbyte
• Size, 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	c,
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	
• Inputs	2 048 byte
Outputs	2 048 byte
of which distributed	
— Inputs	2 003 byte
— Outputs	2 010 byte
Process image	
• Inputs	2 048 byte
Outputs	2 048 byte
 Inputs, adjustable 	2 048 byte
 Outputs, adjustable 	2 048 byte
 Inputs, default 	128 byte
Outputs, default	128 byte
Default addresses of the integrated channels	
— Digital inputs	124.0 to 126.7
— Digital outputs	124.0 to 125.7
— Analog inputs	752 to 761
— Analog outputs	752 to 755
Digital channels	40.040
• Inputs	16 048
— of which central	1 016
Outputs— of which central	16 096 1 008
— of which central Analog channels	1 000
Inputs	1 006
inputs — of which central	253
Outputs	1 007
— of which central	250
Hardware configuration	
Number of expansion units, max.	3
Number of PP masters	
• integrated	1
• via CP	4
Number of operable FMs and CPs (recommended)	
• FM	8
• CP, PtP	8
• CP, LAN	10
Rack	
• Racks, max.	4
Modules per rack, max.	8; 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	the clock continues at the time of day it had when power was switched
period 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; With DP slave only slave clock
• to DP, slave	Yes
• in AS, master	Yes
• in AS, slave	No
Digital inputs	
Number of digital inputs	24
of which inputs usable for technological functions	16
integrated channels (DI)	24
Input characteristic curve in accordance with IEC 61131,	Yes
type 1	
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.)
— 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
unshielded, max.	600 m; for technological functions: No
for technological functions	
— shielded, max.	50 m; at maximum count frequency
— unshielded, max.	not allowed
Digital outputs	
Digital outputs	
Number of digital outputs	16
	16 4; Notice: You cannot connect the fast outputs of your CPU in parallel

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	49.0
• lower limit	48 Ω
• upper limit	4 kΩ
Output voltage	1. (00)
• for signal "1", min.	L+ (-0.8 V)
Output current	F00 A
• 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 measurement 	1
integrated channels (AI)	5; 4x current/voltage, 1x resistance
permissible input voltage for current input (destruction	5 V; Permanent
limit), max.	
permissible input voltage for voltage input (destruction limit), max.	30 V; Permanent
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
Electrical input frequency, max.	400 Hz
No-load voltage for resistance-type transmitter, typ.	3.3 V
Constant measurement current for resistance-type	1.25 mA
transmitter, typ.	
Technical unit for temperature measurement adjustable	Yes; Degrees Celsius / degrees Fahrenheit / Kelvin
Input ranges	
• Voltage	Yes; ±10 V / 100 kΩ; 0 V to 10 V / 100 kΩ
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 MΩ
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	
	2
Number of analog outputs 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	v
• 0 to 10 V	Yes
• -10 V to +10 V	Yes
Output ranges, current	
• 0 to 20 mA	Yes
• -20 mA to +20 mA	Yes
• 4 mA to 20 mA	Yes
Connection of actuators	
 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 voltage outputs, capacitive load, max.with current outputs, max.	0.1 μF 300 Ω
 with current outputs, max. 	300 Ω 0.1 mH
with current outputs, max.with current outputs, inductive load, max.	300 Ω 0.1 mH
 with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur	300 Ω 0.1 mH rents
 with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur Voltages at the outputs towards MANA 	300 Ω 0.1 mH Trents 16 V; Permanent
 with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur Voltages at the outputs towards MANA Current, max. 	300 Ω 0.1 mH Trents 16 V; Permanent
 with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur Voltages at the outputs towards MANA Current, max. Cable length shielded, max. 	300 Ω 0.1 mH Tents 16 V; Permanent 50 mA; Permanent
 with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur Voltages at the outputs towards MANA Current, max. Cable length shielded, max. Analog value generation for the inputs 	300 Ω 0.1 mH rents 16 V; Permanent 50 mA; Permanent
 with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur Voltages at the outputs towards MANA Current, max. Cable length shielded, max. Analog value generation for the inputs Measurement principle 	300 Ω 0.1 mH Tents 16 V; Permanent 50 mA; Permanent
with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur Voltages at the outputs towards MANA Current, max. Cable length shielded, max. Analog value generation for the inputs Measurement principle Integration and conversion time/resolution per channel	300 Ω 0.1 mH Tents 16 V; Permanent 50 mA; Permanent 200 m Actual value encryption (successive approximation)
with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur Voltages at the outputs towards MANA Current, max. Cable length shielded, max. Analog value generation for the inputs Measurement principle Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max.	300 Ω 0.1 mH rents 16 V; Permanent 50 mA; Permanent 200 m Actual value encryption (successive approximation)
with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur Voltages at the outputs towards MANA Current, max. Cable length shielded, max. Analog value generation for the inputs Measurement principle Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable	300 Ω 0.1 mH rents 16 V; Permanent 50 mA; Permanent 200 m Actual value encryption (successive approximation) 12 bit Yes; 16.6 / 20 ms
with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur Voltages at the outputs towards MANA Current, max. Cable length shielded, max. Analog value generation for the inputs Measurement principle Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz	300 Ω 0.1 mH rents 16 V; Permanent 50 mA; Permanent 200 m Actual value encryption (successive approximation) 12 bit Yes; 16.6 / 20 ms 50 / 60 Hz
with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur Voltages at the outputs towards MANA Current, max. Cable length shielded, max. Analog value generation for the inputs Measurement principle Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter	300 Ω 0.1 mH Tents 16 V; Permanent 50 mA; Permanent 200 m Actual value encryption (successive approximation) 12 bit Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms
with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur Voltages at the outputs towards MANA Current, max. Cable length shielded, max. Analog value generation for the inputs Measurement principle Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels	300 Ω 0.1 mH rents 16 V; Permanent 50 mA; Permanent 200 m Actual value encryption (successive approximation) 12 bit Yes; 16.6 / 20 ms 50 / 60 Hz
with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur Voltages at the outputs towards MANA Current, max. Cable length shielded, max. Analog value generation for the inputs Measurement principle Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels released)	300 Ω 0.1 mH Tents 16 V; Permanent 50 mA; Permanent 200 m Actual value encryption (successive approximation) 12 bit Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms
with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and cur Voltages at the outputs towards MANA Current, max. Cable length shielded, max. Analog value generation for the inputs Measurement principle Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f1 in Hz Time constant of the input filter Basic execution time of the module (all channels	300 Ω 0.1 mH Tents 16 V; Permanent 50 mA; Permanent 200 m Actual value encryption (successive approximation) 12 bit Yes; 16.6 / 20 ms 50 / 60 Hz 0.38 ms

 Resolution with overrange (bit including sign), max. 	12 bit
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
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	0
Number of PROFINET interfaces	0
Number of RS 485 interfaces	2; MPI and PROFIBUS DP
Number of RS 422 interfaces	0
1. Interface	
Interface type	Integrated RS 485 interface
Isolated	No
Interface types	
• RS 485	Yes
Output current of the interface, max.	200 mA
a separation of the interiore, more	

Protocols	
• MPI	Yes
 PROFIBUS DP master 	No
 PROFIBUS DP slave 	No
 Point-to-point connection 	No
MPI	
Transmission rate, max.	187.5 kbit/s
Services	
— PG/OP communication	Yes
— Routing	Yes
Global data communication	Yes
— S7 basic communication	Yes
— S7 communication	Yes; Only server, configured on one side
— S7 communication, as client	No; but via CP and loadable FB
— S7 communication, as crient — S7 communication, as server	Yes
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2. Interface	Interreted DC 405 interface
Interface type	Integrated RS 485 interface
Isolated	Yes
Interface types	· ·
• RS 485	Yes
Output current of the interface, max.	200 mA
Protocols	
• MPI	No
PROFINET IO Controller	No
PROFINET IO Device	No
PROFINET CBA	No
 PROFIBUS DP master 	Yes
 PROFIBUS DP slave 	Yes
Point-to-point connection	No
PROFIBUS DP master	
	4 O BAL: 1/-
 Transmission rate, max. 	12 Mbit/s
Transmission rate, max.Number of DP slaves, max.	12 MDIVS
Number of DP slaves, max.	
Number of DP slaves, max. Services — PG/OP communication	124
 Number of DP slaves, max. Services 	124 Yes
 Number of DP slaves, max. Services PG/OP communication Routing 	Yes Yes
 Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication 	Yes Yes No Yes; I blocks only
 Number of DP slaves, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication 	Yes Yes No
 Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client 	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side
 Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication, as client — S7 communication, as server 	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes
 Number of DP slaves, max. Services PG/OP communication Routing Global data communication S7 basic communication S7 communication S7 communication, as client S7 communication, as server Equidistance 	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes
Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication — S7 communication, as client — S7 communication, as server — Equidistance — Isochronous mode	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes No
Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication — S7 communication, as client — S7 communication, as server — Equidistance — Isochronous mode — SYNC/FREEZE	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes
Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication — S7 communication, as client — S7 communication, as server — Equidistance — Isochronous mode — SYNC/FREEZE — Activation/deactivation of DP slaves	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes Yes Yes No Yes Yes
Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 communication — S7 communication, as client — S7 communication, as server — Equidistance — Isochronous mode — SYNC/FREEZE	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes
 Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 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 	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes Yes Yes No Yes Yes
Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 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)	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes Yes Yes No Yes Yes 8
Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 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)	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes Yes Yes No Yes Yes 8
Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 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)	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes Yes No Yes Yes No Yes Yes Yes Yes Yes
Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 communication — S7 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 Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes Yes No Yes Yes No Yes Yes Yes Yes Yes
 Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 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 Address area — Inputs, max. — Outputs, max. 	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes Yes No Yes
Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 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 Address area — Inputs, max.	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes Yes No Yes Yes Yes 8 Yes; as subscriber Yes
 Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 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 Address area — Inputs, max. — Outputs, max. 	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes Yes No Yes Yes Yes 8 Yes; as subscriber Yes
 Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 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 Address area — Inputs, max. — Outputs, max. User data per DP slave 	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes Yes 8 Yes; as subscriber Yes 2 kbyte 2 kbyte
 Number of DP slaves, max. Services — PG/OP communication — Routing — Global data communication — S7 basic communication — S7 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 Address area — Inputs, max. — Outputs, max. User data per DP slave — Inputs, max. 	Yes Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes Yes Yes 2 kbyte 2 kbyte 244 byte
 Number of DP slaves, max. Services — PG/OP communication — 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 Address area — Inputs, max. — Outputs, max. — User data per DP slave — Inputs, max. — Outputs, max. — Outputs, max. 	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes Yes 8 Yes; as subscriber Yes 2 kbyte 244 byte 244 byte The latest GSD file is available on the Internet
 Number of DP slaves, max. Services — PG/OP communication — 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 Address area — Inputs, max. — Outputs, max. — Outputs, max. — Outputs, max. — Outputs, max. PROFIBUS DP slave ● GSD file 	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes Yes 8 Yes; as subscriber Yes 2 kbyte 2 kbyte 244 byte The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd)
 Number of DP slaves, max. Services — PG/OP communication — 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 Address area — Inputs, max. — Outputs, max. — Outputs, max. — Outputs, max. PROFIBUS DP slave • GSD file • Transmission rate, max. 	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes Yes 8 Yes; as subscriber Yes 2 kbyte 2 kbyte 244 byte 244 byte The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd) 12 Mbit/s
 Number of DP slaves, max. Services — PG/OP communication — 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 Address area — Inputs, max. — Outputs, max. — Outputs, max. — Outputs, max. — Outputs, max. PROFIBUS DP slave ● GSD file 	Yes Yes No Yes; I blocks only Yes; Only server, configured on one side No Yes Yes Yes No Yes Yes 8 Yes; as subscriber Yes 2 kbyte 2 kbyte 244 byte The latest GSD file is available on the Internet (http://www.siemens.com/profibus-gsd)

 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; Only server, configured on one side
S7 communication, as client	No
— S7 communication, as server	Yes
Direct data exchange (slave-to-slave	Yes
communication)	165
— DPV1	No
Transfer memory	
— Inputs	244 byte
— Outputs	244 byte
Protocols	
PROFIsafe	No
communication functions / header	140
	V
PG/OP communication	Yes
Data record routing	Yes
Global data communication	Van
• supported	Yes
Number of GD loops, max.	8
Number of GD packets, max.	8
 Number of GD packets, transmitter, max. 	8
 Number of GD packets, receiver, max. 	8
 Size of GD packets, max. 	22 byte
Size of GD packet (of which consistent), max.	22 byte
S7 basic communication	
supported	Yes
 User data per job, 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 CP and loadable FB
 User data per job, max. 	180 kbyte; With PUT/GET
 User data per job (of which consistent), max. 	240 byte; as server
S5 compatible communication	
• supported	Yes; via CP and loadable FC
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, min.	0
adjustable for S7 basic communication, min. adjustable for S7 basic communication, max.	8
-	
usable for routing S7 massage functions	4; max.
S7 message functions	40. Depending on the confirmed constitute (DO/OD LOT)
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	10
-	Yes
presentNumber of entries, max.	500
adjustable	No.
adjustable of which powerfail-proof	
Number of entries readable in RUN, max.	100; Only the last 100 entries are retained 499
— adjustable	Yes; From 10 to 499
— preset Service data	10
	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	
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	
 Potential separation digital outputs 	Yes
 between the channels 	Yes
 between the channels, in groups of 	8
between the channels and backplane bus	Yes
Potential separation analog inputs	
 Potential separation analog inputs 	Yes; common for analog I/O
 between the channels 	No
between the channels and backplane bus	Yes
Potential separation analog outputs	
Potential separation analog outputs	Yes; common for analog I/O
 between the channels 	No
 between the channels and backplane bus 	Yes
Isolation	
Isolation tested with	600 V DC
Ambient conditions	

Ambient temperature during operation	
• min.	0°C
• max.	60 °C
configuration / header	
Configuration software	
• STEP 7	Yes; STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
STEP 7 Lite	No
configuration / programming / header	
 Command set 	see instruction list
 Nesting levels 	8
 System functions (SFC) 	see instruction list
 System function blocks (SFB) 	see instruction list
Programming language	
— LAD	Yes
— FBD	Yes
— STL	Yes
— SCL	Yes
— CFC	Yes
— GRAPH	Yes
— HiGraph®	Yes
Know-how protection	
 User program protection/password protection 	Yes
 Block encryption 	Yes; With S7 block Privacy
Dimensions	
Width	120 mm
Height	125 mm
Depth	130 mm
Weights	
Weight, approx.	680 g
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